THE NORTH AMERICAN MUTILLIDÆ.

BY WILLIAM J. FOX.

The following paper is the result of a short study of our Mutillidæ, with a view to a classification of the genera. It has been my opinion for some time that existing classifications are unnatural, inasmuch as some of the genera at present indicated, have apparently no constant generic characteristics. In fact, one is almost convinced by an examination of the family that no really serious study has been made regarding it. If *Smicromyrme*, *Sphœrophthalma*, *Photopsis* and *Pseudomethoca* were held as valid genera it would be necessary to form one or two genera for forms which will not fit under those heads as now defined. *Sphœrophthalma scœva*, *pennsylvanica* and *auripilis* are examples, which, in consequence of the mandibles, would be referred to *Photopsis*, but on account of the small ocelli are equally referable to *Sphœrophthalma*.

What have been hitherto supposed good characteristics will be found to vary in studying a series. The round eyes of typical *Sphœrophthalma* merge gradually into ovate ones, and exotic species are known which have the eyes partly facetted. The dentition of mandibles in the female sex of that supposed genus is not constant. Usually there is a small tooth present within near the apex, but in many examples this will be found indistinct or absent entirely; in the latter case the mandibles present a falcate appearance. The only real difference in the mandibles is to be found in those species representing *Photopsis* (as restricted by Fox and Ashmead), in which they are peculiarly and heavily built, being broadened at apex, which possesses either two or three teeth. But this characteristic is also found in three species otherwise referable to *Sphœrophthalma* (in the small ocelli, etc.). These species *scœva*, *pennsylvanica* and *auripilis* also agree with *Photopsis* in the unarmed first ventral segment and shape of marginal cell. Clearly these have as high a claim to generic rank as *Photopsis*. They are the evidence, in my mind, that proves the unity of *Sphœrophthalma* and *Photopsis*.

As to *Pseudomethoca*, that has not as much claim to generic rank as *Photopsis*. It has been defined as having two submarginal cells, two discoidal cells, and with the marginal acuminate. That these

are inconstant characters is proven by our own species of *Mutilla* (sens. lat.). Considering the round-eyed species only (representing *Sphœrophthalma*), the number of submarginals is variable in the different species. Generally the third submarginal, if not distinct, is faintly marked; it is rarely as distinct as the second. This characteristic occurs in species with the marginal cell truncate, and in some with it acuminate (*propinqua, oceola*); and we find species with two submarginal cells and a truncate marginal (*fulvohirta*). The same type of mandible seems to exist in *Pseudomethoca Cressonii* and in *Sphœrophthalma fenestrata*, i. e., bidentate, or in other words, with a tooth before the apex on inner margin

It is not the present writer's intention to assert that the form and dentition of the mandibles are entirely valueless as characteristics; they can be used to some extent in separating the groups into which I have arranged *Mutilla*, as in the groups *hexagona* and *scrupea*, in both of which the dentition of the ♂ mandible differs.

In the present work an almost complete series of the species of America, north of Mexico, has been available, including the types of Blake, Cresson, Ashmead and others, as well as a number of Mexican and South American species.

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The Mutillidæ is divisible into subfamilies as follows:

FEMALES.

Thorax of ♀ not divided, at least not on its upper surface.....**Mutillinæ.**
Thorax of ♀ divided into two or more parts.....**Thynninæ.**

MALES.

Tip of abdomen beneath supplied with two slender appendages....**Mutillinæ.**
Tip of abdomen otherwise supplied.....**Thynninæ.**

1. Subfamily MUTILLINÆ.

This subfamily consists of one vast genus *Mutilla* Linné, of which twelve groups are at present known from the United States. Several of these have been described and given generic rank, but a study of them with a large series shows that such a course is not tenable, as they intergrade to an extent which renders a sharp line of demarkation impossible. Closely related groups will be found in both the tri- and bidentate mandibled series; thus the group *asopus* with tridentate mandibles is remarkably close to group *occidentalis*,

in which the mandibles are bidentate, and the other groups of the tridentate series seem closer to groups *imperialis, hexagona,* etc., than to *asopus.* A natural arrangement of the groups therefore is apparently not possible.

The American generic names which fall into the synonymy under *Mutilla* are as follows:

Ephuta Say = group *occidentalis.*
Mutilla (Linné) Blake = groups *hexagona, scrupea.*
Agama Blake (subsequently changed to *Photopsis* Blake) = groups *imperialis* and *anthophoræ.*
Sphærophthalma Blake = groups *occidentalis, pennsylvanica, asopus, waco, canadensis, simillima, grandiceps.*
Photopsis Blake = groups *imperialis* and *anthophoræ.*
Pseudomethoca Ashmead = groups *simillima, canadensis.*

Ephuta Say seems to have been overlooked by Blake when he named *Sphærophthalma,* as it has priority. The groups represented by *Pseudomethoca* Ashmead are the American representatives of *Myrmilla* (Wesm.) André.

The groups into which the North American species of *Mutilla* are divisible are as follows:

Mandibles tridentate in both sexes.
  First and second abdominal segments sessile.
    Wings of ♂ rudimentary; ♀ thorax not crenulated....Gr. **grandiceps.**
    Wings of ♂ normal; ♀ thorax crenulated laterally.
      No pygidium in ♀; wings with two submarginal cells.
        Gr. **canadensis.**
      A pygidium in ♀; wings with a tolerably distinct third submarginal cell.
        Gr. **simillima.**
  First abdominal segment smaller than second, not sessile.
    Wings rudimentary.....Gr. **waco.**
    Wings normal.....Gr. **asopus.**
Mandibles bidentate, or in some females edentate; if tridentate they are very robust and almost abnormal (groups *imperialis, anthophoræ,* etc.), and the teeth are situated at apex.
  Eyes not emarginate anteriorly, rounded or reniform.
    Eyes round, polished, not facetted; marginal cell truncate; mandibles not thickened in ♂.....Gr. **occidentalis.**
    Eyes irregularly rounded, or reniform, generally facetted: mandibles robust in ♂.
      Ocelli small, round, no pygidium in ♀.....Gr. **pennsylvanica.**
      Ocelli large, the anterior one reniform; ♀ with distinct pygidium.
        First abdominal segment (♀) smaller than second, more or less nodose; in ♂ the first and second segments similarly sculptured.
          Gr. **imperialis.**
        First and second abdominal segments (♀) sessile; first segment of ♂ more coarsely sculptured than second.....Gr. **anthophoræ.**

Eyes emarginate anteriorly, facetted.
First and second abdominal segments sessile.....Gr. **hexagona.**
First segment smaller than second, more or less nodose.....Gr. **scrupea.**

The female of group *asopus* is not known.

1. Group *grandiceps.*

Head large, wider than thorax, armed more or less with stout spines. Scape long and slender. Eyes subovate. Mandibles long and narrow tridentate, two small teeth being situated on inner edge before the acute apex. First abdominal segment sessile with second. No pygidial area. Thorax laterally (♀) not crenulated. Wings of male greatly abbreviated, not equalling the thorax in length.

But one species of this group is known and is easily distinguished by the characters given above.

1. **Mutilla grandiceps** Blake.
Mutilla grandiceps Blake, Tr. Am. Ent. Soc., iv. 74. ♂, 1872.
Sphærophthalma grandiceps Blake, ibid, xiii, 344, ♀ ♂, 1886.

Texas. In general appearance this species is not unlike the agricultural ant *Atta.*

2. Group *canadensis.*

Agrees closely with the preceding group, differing in the crenulated thorax of female and shorter, heavier mandibles. The male has the wings fully developed, with two submarginal cells, there being no trace of a third; the marginal cell is acuminate; eyes subreniform.

So far as known the males of this group have the body entirely black.

FEMALES.

Head more or less spined.....2.
Head not spined.....4.
2. Postero-lateral angles of head dentate, the cheeks with a spine.....3.
Postero-lateral angles of head bearing a carina, which terminates below in a sharp spine; abdomen from apex of segment 2 blackish.
canadensis Blake.
3. Head and thorax above, the former especially, covered with appressed, silvery pubescence; postero-lateral angles of head sharply dentate.
Toumeyi Fox.
Head and thorax without appressed pubescence: postero-lateral angles of head acute, but not strongly dentate.....**nephele** n. sp.
4. Greater part of abdomen ferruginous, the silvery maculation, if present, thin, not very distinct.....5.
Abdomen black, except first and last segments, and the second ventral which are ferruginous; silvery pubescence dense, consisting of a transverse

spot at base and apex of second dorsal and two rounded spots laterally, and segments 3-5 entirely; segment 6 with reddish pubescence; tibiæ and tarsi blackish..... **Wickhami** Ckll.

5. Second dorsal segment with silvery ornamentation.....6.
Second dorsal segment without silvery ornamentation, the pubescence, if present, scattered, not taking a definite form.....8.

6. Second dorsal with two rounded silvery spots. Length 3½ mm.
scævolella Ckll.
Second dorsal otherwise maculated. Length 7-10 mm.....7.

7. Second dorsal with a large basal and apical dark macula connected by a narrow line, thereby making the form of an hour-glass; the remainder of segment filled in with silvery pubescence; punctures of thorax coarse, but rather close, not running into reticulations posteriorly.
connectens Cress.
Second dorsal with a transverse bar of thin silvery pubescence a little behind middle, which is extended near each side into a narrower stripe almost to base of segment, so ⊥⊥; thorax with distinct reticulations posteriorly.....**contumax** Cress.

8. Head densely covered with appressed pale pubescence; second segment ferruginous, with sparse silvery pubescence, that of thorax above sparse and blackish.....**præclara** Blake.
Head with some sparse hairs; second segments bright orange, without silvery pubescence; thorax above almost bare medially, but bordered by silvery pubescence (scutellar scale large).
donæ-anæ Ckll. and Fox.

MALES.

Head rounded behind in such a manner that no postero-lateral angles whatever are evident, roughly and densely punctured; punctures of body coarse and rather close; pubescence whitish; wings fusco-hyaline.
geryon n. sp.

Head transverse, the postero-lateral angles evident, the punctuation distinct; punctures of body not as coarse or close as in *geryon;* wings subhyaline.....2.

2. Postero-lateral angles of head dentate; cheeks sometimes spined.
canadensis Blake.
Postero-lateral angles of head obtuse.....3.

3. Legs comparatively stout; recurrent vein received by second submarginal cell near middle; head rather subquadrate, the punctures rather evenly separated.....**gila** Blake.
Legs slender; recurrent vein almost interstitial with first transverso-cubital vein, or received by second submarginal cell at extreme base; head transverse, the punctures sparser and irregular.....**athamas** n. sp.

2. **Mutilla Toumeyi** Fox.

Sphærophthalma Toumeyi Fox, Ent. News, v, 297, ♀, 1894.

Arizona: Tucson.

3. **Mutilla nephele** n. sp.

♀.—Ferruginous, sparsely clothed with pale hair; flagellum from second joint fuscous; legs dark testaceous; second dorsal segment with two round spots of

silvery pubescence; head quadrate, broader than thorax, with strong even punctures, the postero-lateral angles acute, but hardly dentate; cheeks carinated posteriorly, the carina terminating below in a spine; thorax subquadrate, subtruncate posteriorly, the punctuation stronger than that of head, especially posteriorly, where it is somewhat reticulate; first abdominal segment sessile with second, finely punctured; second dorsal with distinct, even and rather close punctures, the second ventral with larger, sparse punctures. Length 3-4 mm.

Texas: Brownsville, June (Wickham). Two specimens sent to me by T. D. A. Cockerell.

4. **Mutilla canadensis** Blake.

Mutilla (*Sphærophthalma*) *canadensis* Blake, Tr. Am. Ent. Soc., iii, 252, ♀, 1871.
Sphærophthalma canadensis Blake, ibid, xiii, 248, ♀, 1886.
Sphærophthalma alveolata Provancher, Le Nat. Can., xxii, 110, ♂.
Photopsis Cressonii Fox, Ent. News, i, 138, ♂ (not *Mutilla Cressonii* Blake).
Pseudomethoca Cressonii Ashmead, Tr. Am. Ent. Soc., xxiii, 182, ♂, 1896.
Mutilla neojerseiensis Dalla Torre, Cat. Hym., viii, 65, ♂, 1897.

Occurs from Canada to Texas. This species is entirely distinct from the *Mutilla canadensis* of Provancher, and from *Photopsis canadensis* of the same author.

5. **Mutilla scævolella** Ckll. and Cas.

Sphærophthalma scævolella Cockerell and Casad, Tr. Am. Ent. Soc., xxii, 198, ♀.

New Mexico: Las Cruces in May. Only the unique type seen.

6. **Mutilla connectens** Cress.

Mutilla connectens Cresson, Proc. Ent. Soc. Phila., iv, 387, ♀, 1865.
Mutilla (*Sphærophthalma*) *connectens* Blake, Tr. Am. Ent. Soc., iii, 252, ♀, 1871.
Sphærophthalma connectens Blake, ibid, xiii, 245, ♀, 1886.

Lower California. Another specimen labelled "California."

7. **Mutilla contumax** Cress.

Mutilla contumax Cresson, Proc. Ent. Soc. Phila., iv, 437, ♀, 1865.
Mutilla (*Sphærophthalma*) *contumax* Blake, Tr. Am. Ent. Soc, iii, 252, ♀, 1871.
Sphærophthalma contumax Blake, ibid, xiii, 251, ♀, 1886.

Colorado; New Mexico: Santa Fé, July (Cockerell).

8. **Mutilla præclara** Blake.

Sphærophthalma præclara Blake, Tr. Am. Ent. Soc., xiii, 252. ♀, 1886.

Arizona. Another specimen in coll. U. S. Nat'l Museum from Sulphur Springs Valley, Arizona, May 9, collected by Hubbard.

9. **Mutilla donæ-anæ** Ckll. and Fox.

Sphærophthalma donæ-anæ Cockerell and Fox, Pr. Ac. N. S. Phila., 137, ♂, 1897.

New Mexico: Las Cruces (Cockerell).

10. **Mutilla Wickhami** Ckll. and Cas.

Sphærophthalma Wickhami Cockerell and Casad, Tr. Am. Ent. Soc. xxii, 297, ♀, 1897.

Texas: Houston (Wickham). Only the unique type seen. This species differs from the others in this group by the well-developed scutellar scale.

The following three species are known in the male sex only:

11. **Mutilla geryon** n. sp.

♂.—Black throughout, clothed with pale, erect pubescence, except on head above, where it is black; abdominal segments 2–5 thinly fringed with pale hairs at apex; head with strong, confluent punctures, rounded behind, the postero-lateral angles not evident; space between hind ocelli equal to about half that between them and eyes, the latter somewhat reniform; antennæ about as long as the head and that portion of thorax anterior to middle segment; thorax strongly punctured, but not as closely as head; first abdominal segment sessile with second, with strong, separated punctures; second dorsal with the punctures more separated, those of second ventral somewhat stronger; apical segments with finer, though distinct punctures; wings fusco-hyaline, nervures and stigma blackish, the recurrent vein received by second submarginal cell near middle. Length 7 mm.

Missouri: St. Louis, August 28th. One specimen.

12. **Mutilla gila** Blake.

Mutilla (*Sphærophthalma*) *gila* Blake, Tr. Am. Ent. Soc., iii, 250, ♂, 1871.
Sphærophthalma gila Blake, ibid, xiii, 245, ♂, 1886.

Texas. Only the unique type seen.

13. **Mutilla athamas** n. sp.

♂.—Black, shining, clothed with thin pale hairs; legs not as dark as body, more brownish, comparatively slender; head transverse, with strong, widely separated punctures, postero-lateral angles obtuse, space between hind ocelli equal to less than half that between them and eyes; antennæ about as long as head and thorax united; the first joint of flagellum distinctly shorter than second: thorax with strong, separate punctures, those on mesopleuræ closest; middle segment reticulated, the reticulation largest above; first abdominal segment with large sparse punctures, not very broad, sessile with second, the latter with the punctures large, but somewhat closer; wings subhyaline, nervures and stigma testaceous brown, the recurrent vein received by second submarginal cell at base. Length 5 mm.

California: Poway. One specimen.

3. Group *simillima*.

This group agrees with both the preceding in the first and second abdominal segments being sessile, but differs by the female possessing a distinct pygidial area, which is either striated or punctured, and by the large rounded eyes of male; this sex also differs by possessing a third submarginal cell, which, while less distinct than the other cells, yet is easily discernible. Both sexes have a rather robust

form, and like the two preceding groups, the head is large, wider than thorax in the female.

The pygidium is more distinct in the species having it striated (*simillima*, etc.). In *harpalyce* and *brazoria* it is not much more distinct than in the species of the preceding group.

FEMALES.

Body with a more or less dense, appressed pubescence; pygidium not striated...2.
Body thinly pubescent, nude in greater part; pygidium striated.....4.

2. Head, thorax and abdomen above with dense fulvous pubescence, both appressed and erect, that on fifth dorsal segment grayish; pubescence of legs black.....**harpalyce** n. sp.
   Upper part of body less densely pubescent, the erect hairs wanting, that of the legs grayish, as well as that segments 3 and following.....3.
3. Extent of red ground color variable, the head, thorax and second dorsal generally of that color, with appressed fulvous pubescence.
   montivaga Cress.
   Only the second dorsal red, with fulvous pubescence; head and thorax deep, black..... * **montivaga** var. (=*brazoria* Blake).
4. Head large, transverse, wider than thorax; pygidium with longitudinal striæ.....5.
   Head about as wide as thorax, subrounded behind; pygidium with diverging striæ (femora reddish; no spots on second dorsal).....**æetis** n. sp.
5. Width of thorax anteriorly equalling the length of its dorsal surface; head very large, subquadrate; legs dark brown; second dorsal blackish at base, apex and laterally, medially orange, which color is sometimes divided by a narrow black line, with coarse, round punctures.
   hippodamia n. sp.
   Thorax longer than broad; head transverse; second dorsal not at all blackish, generally with two yellowish spots; punctures confluent; femora sometimes reddish.....**simillima** Smith.

MALES.

More or less reddish or yellowish.....2.
Entirely black.....5.

2. Second segment reddish or yellowish; thorax usually entirely black, though sometimes slightly reddish.....3.
   Abdomen entirely black, the segment thickly fringed apically with yellowish pubescence; dorsulum, scutellum and pronotum reddish.
   propinqua Cress.
3. Head, thorax and most of abdomen with black pubescence; second segment reddish.....4.
   Head, thorax and legs with grayish pubescence; abdomen castaneous, second dorsal bright yellow, the apical margin of dorsal segments with golden pubescence.....**flavida** Blake.
4. Form stout; segments 1 and 2 castaneous, the second dorsal yellower, both clothed with fuscous pubescence; femora fringed beneath with long whitish hairs. Length 11–13 mm.....**oceola** Blake.

* The most widely separated varieties of *montivaga* are tabulated only.

Form as usual; abdomen, as a rule, entirely reddish, the color rather uniform throughout, segments 1 and 2 with pale glittering pubescence; femora sparsely pubescent. Length 8–10 mm.....**Sanbornii** Cress.

5. Pubescence entirely black; pubescence black.....**anthracicolor** D. T.
Pubescence entirely pale; wings subhyaline.....**ægæon** n. sp.

14. **Mutilla harpalyce** n. sp.

♀.—Black, the head, thorax and abdomen above, except first segment, as far as fifth segment reddish and densely clothed with appressed and erect fulvous pubescence as far as fourth segment; mandibles ferruginous, darker apically; fifth dorsal segment with pale pubescence; sides of thorax, legs and abdomen beneath with sparse black pubescence; ventral segments 2–5 fringed with grayish yellow hairs; head subquadrate, wider than thorax; thorax not much longer than broad, contracted medially, crenulated and subtruncate behind; first and second segments sessile; second ventral shining with large, scattered punctures, which are sparser basally; other ventrals finely and closely punctured; pygidium rugoso-punctate. Length 9–10 mm.

California: Poway and San Diego. Two specimens.

15. **Mutilla montivaga** Cress.

Mutilla montivaga Cresson, Proc. Ent. Soc. Phila., iv, 436, ♀, 1865.
Mutilla (Sphærophthalma) brazoria Blake, Tr. Am. Ent. Soc., iii, 255, ♀, 1871.
Sphærophthalma montivaga Blake, ibid, xiii, 254, ♀, 1886.
Sphærophthalma brazoria Blake, ibid, xiii, 254, ♀, 1886.

Texas; Kansas; Colorado; New Mexico; Arizona. A very variable species, of which *montivaga* and *brazoria* seem to be the extremes.

16. **Mutilla hippodamia** n. sp.

♀.—Ferruginous, clothed, though not densely, with pale hairs; legs brownish; first segment and second dorsal at base, apex and laterally, fuscous, the latter otherwise orange, which color is sometimes divided by a fuscous line; head very large, subquadrate, wider than thorax, coarsely and confluently punctured, buccal carina sharp; antennæ fuscous from fourth joint, the third joint longer than fourth and fifth united; thorax short, subquadrate, its length about equal to its greatest width, acutely dentate anteriorly at sides, rugoso-punctate above, sides crenulated; first segment sessile with second; second dorsal with strong, rounded punctures, becoming much closer anteriorly; second ventral with coarser, sparser punctures; other segments compactly punctured, especially the dorsals; pygidium rugoso-punctate; all the segments fringed with silvery pubescence.

Alabama; Louisana; Texas.

17. **Mutilla simillima** Sm.

Mutilla simillima Smith, Cat. Hym. Brit. Mus., iii, 62, ♀, 1855.
Sphærophthalma simillima Blake, Tr. Am. Ent. Soc., xiii, 254, ♀, 1886.

Florida. I have also collected this species in Southern New Jersey.

Three specimens before me from Florida are much larger than the typical form, and the orange color of second dorsal segment is

confined to two rather evenly rounded spots. Otherwise they do not seem to differ.

18. **Mutilla æetis** n. sp.

♀.—Ferruginous, tips of mandibles, antennæ from third joint, legs, except greater part of femora, apex of first and second dorsal segments, blackish; pubescence of head and thorax sparse and black, on legs pale; all the abdominal segments fringed with pale pubescence apically, that on first dorsal interrupted medially; head about as wide as thorax, strongly and confluently punctured, the postero-lateral angles slightly evident; first joint of flagellum about as long as following two united; thorax distinctly longer than broad, the punctures of upper surface larger and less confluent than those of head, sides scarcely crenulated; first and second segments sessile, second dorsal with rounded, separated punctures, from which project fine, appressed, golden hairs, which give the segments the appearance of being striato-punctate; second ventral with sparse, shallow punctures; pygidium black, with radiating striæ. Length 10–12.

Florida. Five specimens, one collected by Mrs. A. T Slosson.

19. **Mutilla propinqua** Cress.

Mutilla propinqua Cresson, Proc. Ent. Soc. Phila., iv, 433, ♂, 1865.
Sphærophthalma propinqua Blake, Tr. Am. Ent. Soc, xiii, 242, ♂, 1886.

Texas; Colorado; Montana; New Mexico: Santa Fé (Cockerell); Arizona. Perhaps the male of *montivaga*.

20. **Mutilla occeola** Blake.

Mutilla (Sphærophthalma) occeola Blake, Tr. Am. Ent. Soc., iii, 248, ♂, 1871.
Sphærophthalma occeola Blake, ibid, xiii, 243, ♂, 1886.

Florida; Texas. This is certainly not the ♂ of *dubitata* Smith, as suggested by Blake (Tr. A. E. S., xiii, p. 243) as it is in nowise related; it is probably the male of *hippodamia* described herein.

21. **Mutilla Sanbornii** Blake.

Mutilla (Sphærophthalma) Sanbornii Blake, Tr. Am. Ent. Soc., iii, 248, ♂, 1871.
Sphærophthalma Sanbornii Blake, ibid, xiii, 243, ♂, 1886.

Occurs from Massachusetts to Texas. Supposed to be the male of *simillima*.

22. **Mutilla flavida** Blake.

Mutilla (Sphærophthalma) flavida Blake, Tr. Am. Ent. Soc., iii, 249, ♂, 1871.
Sphærophthalma flavida Blake, ibid, xiii, 244, ♂, 1886.

Texas. Only the unique type seen. *Sphærophthalma volotilis* Cameron, from Mexico, seems to be identical with this species.

23. **Mutilla anthracicolor** D. T.

Sphærophthalma anthracina Fox, Ent. News, iii, 172, ♂, 1892 (Nec *Mutilla anthracina* Gerstaecker).
Mutilla anthracicolor Dalla Torre, Cat. Hym., vii, 9, ♂, 1897.

California: San Diego. Only the unique type seen.

24. **Mutilla ægæon** n. sp.

♂.—Black, rather densely clothed with pale, grayish pubescence, the abdominal segments 2-5 fringed with it, the last two segments with black pubescence; head not as wide as thorax, subrounded behind, compactly punctured; first joint of flagellum but little more than half as long as the second; thorax with strong punctures, those of dorsulum being very large and deep; first and second segments sessile, the second dorsal with large, round, separated punctures, the second ventral with large punctures, but not as regular as on second dorsal, remaining segments strongly and closely punctured, the punctures not near as large as on segment 2, however; wings subhyaline, iridescent, nervures and stigma black, third submarginal cell tolerably distinct. Length 6½ mm.

Arizona: Tucson, on *Bigelovia Hartwegi* (Toumey). One specimen in collection of U. S. National Museum.

4. Group *waco*.

This and the following group agree with the preceding groups in the tridentate mandibles, but differ in the small first abdominal segment, which is not sessile with the second, and in shape approaching that of group *occidentalis*. The female head is not enlarged as in the preceding groups, and a distinct pygidium is present. The male, as far as known, has the wings rudimentary as in *M. grandiceps*.

FEMALES.

Black, the second dorsal segment scarlet, segments 3-5 also scarlet sometimes, if not, with black pubescence..... **waco** Blake.

Ferruginous; abdomen from apex of segment 2 black, with silvery pubescence; legs black..... **harmonia** n. sp.

MALE.

Only the male of *waco* is known; it is colored like the female and has rudimentary wings; the second ventral segment has a median carina terminating in a tooth beyond middle.

25. **Mutilla waco** Blake.

Mutilla (*Sphærophthalma*) *waco* Blake, Tr. Am. Ent. Soc., iii, 238, ♀, 1871.
Sphærophthalma waco Blake, ibid, xiii, 229, ♀, 1886

Texas.

26. **Mutilla harmonia** n. sp.

♀.—Ferruginous; antennæ, legs and abdomen from apex of segment, 2 black; head and thorax above with some sparse, golden hairs; second dorsal usually with four yellowish spots, the darker, ferruginous, ground color in the shape of a cross; segments 3 and following with silvery pubescence; a silvery spot at apex of second dorsal medially; thorax pyriform, coarsely punctured above, the sides deeply punctured; first abdominal segment smaller than second, not sessile with it; second dorsal with elongate punctures; second ventral with large separated punctures, subcarinated down middle; pygidium rugose.

Pennsylvania: Philadelphia; New Jersey: Gloucester County; Florida: Jacksonville. Four specimens collected by C. W. Johnson.

5. Group *asopus.*

Differs from group *waco* in the fully-developed wings of male, which sex only is known. The marginal cell is broadly truncate, as in group *occidentalis,* and two distinct submarginal cells with faint traces of a third are present. Second ventral segment with a median carina terminating in a tooth.

MALES.

Head and thorax more or less red, with reddish or fulvous pubescence above...2.
Head and thorax black, with entirely black pubescence (that of segments 3 and following black).....**bexar** Blake.
2. Segments 3 and following with black pubescence.....**asopus** Cress.
Segments 3 and following above with pale fulvous pubescence..**hector** Blake.

27. **Mutilla asopus** Cress.
Mutilla asopus Cresson, Proc. Ent. Soc. Phila., iv, 435, ♀, 1865.
Sphærophthalma asopus Blake, Tr. Am. Ent. Soc., xiii, 225, ♂, 1886

Colorado. Blake suggests that either this species or *hector* is the male of *ægina,* which is not likely, inasmuch as *ægina* belongs to a different section of the genus, having bidentate mandibles.

28. **Mutilla hector** Blake.
Mutilla (Sphærophthalma) hector Blake, Tr. Am. Ent. Soc., iii, 237, ♂, 1871.
Sphærophthalma hector Blake, ibid, xiii, 225, ♂, 1886.

Kansas. Probably represents a variety of *asopus.*

29. **Mutilla bexar** Blake.
Mutilla (Sphærophthalma) bexar Blake, Tr. Am. Ent. Soc., iii, 238, ♂, 1871.
Sphærophthalma bexar Blake, ibid, xiii, 229, ♂, 1886.

Texas. These three species (?) may be but forms of one variable species.

6. Group *occidentalis.*

Eyes round or irregularly ovate, smooth, not facetted, entire in both sexes. Mandibles not emarginate, either with a tooth within near apex, or falcate (edentate) in the females. Abdominal segment of female usually narrower at apex than base of second, but is not strongly nodose. Thorax of female varying from pyriform to hexagonal. Tibial spurs of female more or less serrated. Marginal cell truncate, the number of submarginals varying from two to three, usually with three.

The species of this large group represent most of those included by

Blake in the genus *Sphærophthalma*, and may be regarded as typical representatives of that genus. Blake's name *Sphærophthalma* is antedated by *Ephuta* Say by nearly fifty years.

FEMALES.

Thorax elongate or pyriform....2.
Thorax short, hexagonal....31.
2. Thorax and abdomen, or the abdomen alone with dense pubescence, which, in many species, is very long....3.
Insect not densely pubescent, frequently almost nude....17.
3. Pubescence of thorax and abdomen concolorous....4.
Pubescence of thorax and abdomen not concolorous....9.
4. Pubescence of body above very long, white or yellowish....5.
Pubescence short, as a rule fulvous or reddish, in one species whitish....11.
5. Insect entirely clothed with long white pubescence, inclusive of legs....6.
Insect with more or less black pubescence....7.
6. Pygidium not longitudinally striated, ground color red....**gloriosa** Sauss.
Pygidium longitudinally striated, ground color black.
pseudopappus Ckll. (var. of *gloriosa*?).
7. Pubescence of legs entirely black....8.
Femora and tibiæ more or less with pale yellowish pubescence.
magna Cress.
8. Pubescence dirty white, pertaining sometimes to ochraceous.
Sackenii Cress.
Pubescence orange....**Sackenii** Cress., var.
9. Keel of first ventral segment prominently produced anteriorly, size large..10.
Keel of first ventral segment emarginate or bidentate. Length 10 mm.
zelaya Blake.
10. Pubescence of abdomen above varying from fulvous to castaneous; head and thorax with tolerably dense pubescence....**orcus** Cress.
Pubescence of abdomen above pale golden yellow, that of head and thorax sparse, leaving greater portion of those places bare....**leda** Blake.
11. Pubescence fulvous or reddish....12.
Head, thorax above, except a black band medially, two spots on second dorsal, its apex, the third entirely, the fourth and fifth laterally, apex of second ventral, and third and fourth entirely with whitish pubescence, dorsals 4 and 5 with black pubescence medially, ground color red....**Sicheliana** Sauss.
12. Carina of first ventral segment prominently produced anteriorly....13.
Carina of first ventral segment scarcely produced; head and thorax above, second dorsal, except basal third, third and fourth dorsals laterally, and fifth entirely with golden brown pubescence, ground color of abdomen black. Length 10 mm....**clio** Blake.
13. Second dorsal black at base and apex, the fourth and fifth with red or fulvous pubescence, the process of first ventral segment rather acuminate..14.
Second dorsal red, or entirely clothed with red or fulvous pubescence, the fourth and fifth with reddish pubescence, the process of first ventral more or less truncate....15.

14. Pubescence appressed, rather short and silky, usually scarlet, though sometimes paler.....**occidentalis** Linné.
Pubescence erect, tolerably long and coarse, pale fulvous.
comanche Blake.
15. Segment 3 and following entirely black, or the third sometimes with some fulvous pubescence.....16.
Segment 3 and following entirely, or at the sides with pale pubescence, ground color variable, the second dorsal, however, always reddish or fulvous; pubescence of body above varying from pale fulvous to a deeper red.
ægina Cress.
16. Ground color castaneous, second dorsal fulvous; head above entirely with reddish pubescence.....**creusa** Cress.
Ground color black, second dorsal fulvous in part or black; head on vertex with reddish pubescence.....**creusa** var. (=*medea* Cr.).
17. First segment almost sessile with the second; head at most scarcely as wide as widest part of thorax, more or less narrowed behind.....18.
First segment rather nodose, rarely otherwise; head large, fully as wide or wider than widest part of thorax, subquadrate, not or scarcely narrowed behind.....27.
18. Second dorsal segment black in greater part.....19.
Second dorsal reddish, as well as greater part of insect.....20.
19. Second dorsal with two or four yellow spots; apical margin of segments fringed with silvery pubescence; legs usually red but varying to black.....4-**guttata** Say.
Second dorsal not maculate, or with a faint trace of spots; abdomen without silvery pubescence, or the ventral segments may be fringed with it; legs black.....4-**guttata** var. (=*electra* Blake).
20. Head rounded behind, not tuberculate.....22.
Head with postero-lateral angles angulate, carinate or tuberculate.....21.
21. Postero-lateral angles of head acutely angulate, the first segment dentate on the sides medially.....**anguliceps** n. sp.
Postero-lateral angles of head bearing a short carina or elongate tubercle; first segment not dentate on the sides medially.....**cypris** Blake.
22. Head and thorax with a dense, hoary pubescence, the entire insect sparsely clothed with erect, pale hair; abdomen entirely red, except apex of second dorsal, which is black.....**caneo** Blake.
Head and thorax scarcely pubescent at most with some erect hairs; apical abdominal segments black entirely or in part.....23.
23. Carina of first ventral segment produced anteriorly into a stout tooth (legs black).....**ferrugata** Fabr.
Carina of first ventral segment emarginate medially, so that it is bidentate.....24.
24. Second dorsal segment coarsely sculptured throughout.....25.
Second dorsal segment punctured, sparsely so between the middle and sides, so that it presents two large, rather smooth areas, which are pale yellow; thorax very coarsely rugose, the head strongly punctured. Length 6 mm.....**rugulosa** n. sp.
25. At most the head and thorax with sparse, golden pubescence; second dorsal not rugosely punctured at base, its apical silvery band entire.....26.

Head, thorax and second dorsal segment clothed with a glittering, appressed, sparse, golden pubescence, the second dorsal rugosely punctured at base, its apical silvery band divided into three parts; head more quadrate than in the allied species, tending somewhat to that of the *texana*, *scævola*, etc., section ..... **sparsa** n. sp.

26. Legs black or piceous; entire insect clothed more or less with an erect, pale pubescence; head with a close, confluent, coarse punctuation. **vesta** Cress.

Legs red; insect with scarcely any erect pubescence, except in certain places; head with a strong, separated punctuation ..... **sappho** n. sp.

27. First segment with the basal productions dentate; punctuation not unusually coarse ..... 28.

First segment with the basal productions lamellar; punctuation unusually coarse, the thorax and second segment deeply pitted; head and thorax black; abdomen castaneous, pertaining to yellowish on second segment ..... **Ulkei** Cress.

28. Postero-lateral angles of head unarmed ..... 29.

Postero-lateral angles of head carinate (reddish; legs black; second dorsal with two pale yellowish spots) ..... **carinicepS** n. sp.

29. Head and thorax black or rufo-piceous, legs darker; second segment red, with appressed, orange pubescence above; apical segments dorsally with long black hairs, and fringed above and beneath, more or less, with pale pubescence ..... **texana** Blake.

Insect ferruginous ..... 30.

30 Coarsely sculptured throughout, sparsely clothed with long, pale hairs; leg-spines very robust, as well as the legs themselves; first segment prominently nodose, with a silvery spot at apex; second segment usually with paler spots ..... **scævola** Blake.

Sculptured as usual, about as in *ferrugata*, *vesta*, etc., scarcely clothed with pale hairs; legs slender, the spines delicate in comparison to *scævola;* first segment more as in *ferrugata*, etc., not maculate; second segment unicolored; dorsals 2 at apex, and 3–5 medially, with a silvery spot. **Bollii** n. sp.

31. Head at most as wide as thorax, usually not as wide ..... 32.

Head wider than thorax ..... 41.

32. Pubescence whitish ..... 33.

Pubescence colored otherwise ..... 34.

33. Pubescence above long and white, beneath and on legs black, ground color black or piceous ..... **clytemnestra** n. sp.

Pubescence of entire body, including that of legs, long and white, ground color reddish ..... **thetis** Blake.

34. Body clothed with a close, appressed, short pubescence, and some much sparser, erect hairs (in one species wanting) ..... 35.

Body clothed with coarse, long and matted, or semi-erect pubescence ..... 38.

35. Pubescence of thorax above and second dorsal segment colored the same .. 36.

Pubescence of head and thorax above grayish white, the thorax anteriorly and posteriorly with a black triangular patch of black pubescence; second dorsal with scarlet pubescence; the erect pubescence of upper portion of insect black, otherwise inclusive of legs, whitish; apical segments, with pale pubescence, except the apex of second dorsal and the third (except at sides of both), which have black pubescence. **Dugesii** Ckll. and Cas.

36. Second dorsal with black pubescence at base and apex in middle.....37.
Second dorsal, as well as entire insect above, covered with a golden orange pubescence, with practically no erect hairs; pubescence of legs and body beneath black.....**californica** var.
37. Second ventral segment with very coarse, scabrous sculpture, ground color black (body clothed throughout with whitish or yellowish white pubescence).....**scabra** Fox.
Second ventral segment with large, sparse, shallow punctures, ground color reddish (pubescence above varying from scarlet, to orange, to yellowish white, beneath it is always whitish).....**heterochroa** Ckll.
38. Ground color reddish; second dorsal almost nude, with large, sparse punctures.....39.
Ground color black.....40.
39. Pubescence of head and thorax dirty white; a black patch on third dorsal, the remaining segments with dirty white pubescence..**phœnix** n. sp.
Pubescence pale yellowish throughout; no black patch on abdomen.
venifica Blake.
40. Pubescence above pale yellow.....**progne** n. sp.
Pubescence above varying from scarlet to fulvous.....**californica** Rads.
41. Pygidium rugose or coriaceous.....42.
Pygidium coarsely striated longitudinally.....43.
42. Pubescence pale yellow or grading into fulvous.....**aureola** Blake.
Pubescence scarlet.....**pacifica** Cress.
43. Head and thorax with black pubescence, that of abdomen above fulvous.
gorgon Blake.
Head, thorax and abdomen above with fulvous pubescence.
gorgon Blake, var,

MALES.

First segment distinctly nodose, the suture between it and segment 2 deep and well marked.....2.
First segment not or scarcely nodose, the suture between it and segment 2 not deep.....27.
2. Carina of first ventral segment produced posteriorly into quite a long tooth..3.
Carina of first ventral segment not unusually produced posteriorly.....7.
3. Head and thorax above and apical half of abdomen with pale pubescence.
Sackenii Cress.
The pubescence otherwise colored.....4.
4. Entirely black, except the apical portion of dorsal segment 2, and the following entirely, which are clothed with long fulvous hairs..**orcus** Cress.
Head and thorax above with reddish or fulvous pubescence.....5.
5. First and second transverso-cubital veins coalescing at the top: head and thorax above, and dorsal segments of abdomen from apex of segment 2 to apex, with fiery-red pubescence.....**coccineohirta** Blake.
First and second transverso-cubital veins distinctly separated above.....6.
6. Punctuation of second dorsal segment sparse medially, so that the segment is more or less shiny in that spot, ventrally the segment has rather even, strong punctures; dorsals 3, 6 and 7 with fulvous pubescence.
occidentalis Linné.

Punctuation of second dorsal segment even throughout, ventrally the punctures are not quite so strong or as regular as in *occidentalis;* segments 3 and following usually with fulvous pubescence, although sometimes segments 4 and 5 are almost as in *occidentalis*....**comanche** Blake.

7. Head and thorax above with fulvous pubescence.....8.
Head and thorax with the pubescence otherwise colored.....12.

8. Second segment entirely black; head and thorax above and abdomen above from apex of segment 2 with fulvous pubescence..**ochracea** Blake.
Second segment more or less fulvous, with two spots usually, which, however, sometimes coalesce.....9.

9. Segment 3 above and following, as well as part of second, with fulvous or red pubescence.....10.
Segment 3 and following with black pubescence.....11.

10. Abdomen, except first and basal half of second segment, reddish-fulvous, this portion of abdomen, as well as head and thorax above with scarlet pubescence; first and second transverso-cubital veins separated above.....**testaceiventris** n. sp.
Abdomen black, the second segment above on apical half with two fulvous spots, which, sometimes, coalesce; thorax and abdomen from second segment on with fulvous pubescence.....**ursula** Cress.

11. Two distinct submarginal cells, the first and second transverso-cubital veins almost coalescing above; second dorsal segment with two yellowish spots on posterior half; head with very little fulvous pubescence.
bioculata Cress.
Three distinct submarginal cells, the first and second transverso-cubital veins distinctly separated above; second segment entirely red, with two paler spots on dorsal moiety; head above antennæ with fulvous pubescence.....**pyrrhus** n. sp.

12. Abdomen above, from apex of segment 2, with fulvous pubescence (that of thorax black).....13.
Abdomen with pubescence otherwise colored.....15.

13. Second dorsal segment on apical portion with two large fulvous spots; third submarginal cell absent or nearly so.....**chiron** Blake.
Abdomen entirely black, except the pubescence noted.....14.

14. First and second transverso-cubital veins distinctly separated above; carina of first segment obtusely angulate; pubescence of abdomen above from base of second segment bright scarlet.....**phaon** n. sp.
First and second transverso-cubital veins united above, the submarginal cell almost subpetiolate; carina of first segment bidentate; pubescence of abdomen above from apical half of segment 2 fulvous.**zelaya** Blake.

15. Head and thorax black.....17.
Head and thorax more or less red.....16.

16. Head and thorax entirely red; hind trochanters, spinose, segment 3 and following black.....**creon** Blake.
Head, pronotum and dorsulum black; head and thorax with rather dense, hoary pubescence; hind trochanters unarmed; abdomen entirely red.
eximia Blake.

17. Abdomen entirely, or from (and inclusive of) second segment reddish....23.
Abdomen in greater part black, the second segment reddish, except in one species.....18.

18. First abdominal segment, viewed from the side, distinctly nodose.....20.
First abdominal segment shorter and broader, not distinctly nodose.....19.
19. First segment with tolerably strong, even punctures, the punctuation of second dorsal rather subtile; segment 2 above and beneath reddish. Length 15 mm.....**fenestrata** Lep.
First segment with large, coarse punctures, the punctuation of second dorsal strong and separated; second segment red above only. Length 10 mm. **agenor** n. sp.
20. Entirely black; pubescence grayish; wings subfuscous.....**gibbosa** Say.
Abdomen more or less reddish.....21.
21. Second dorsal segment with black pubescence, at least on basal half, pale yellowish on apical portion in one species.....22.
Second dorsal segment with rather long, yellowish pubescence, except at extreme base, entirely reddish or red above only.....**macra** Cress.
22. Punctuation of first dorsal segment unusually coarse and irregular, the pubescence of second black throughout. Length about 9 mm.**canella** Blake.
Punctuation of first segment strong, but rather even and separated, the pubescence of apical portion of second yellowish. Length 12 mm. or over.....**castor** Blake.
23. Head and thorax rather densely clothed with grayish pubescence.....24.
Head and thorax not densely clothed with grayish pubescence.....26.
24. First abdominal segment strongly nodose.....25.
First abdominal segment hardly nodose, shorter and broader (ventrals 2 and 3 fringed with pale pubescence at apex).....**monticola** Cress.
25. First abdominal segment nearly twice as long as broad, very much nodose: segments 3, 4 and 7 with pale pubescence.....**apicalata** Blake.
First abdominal segment shorter and broader, not nearly as nodose; abdomen with long black hairs, except on the apical segment. **obscura** Blake. var.
26. Apical margin of the segments, at least dorsally, with black pubescence, that of segments 1 and 2 grayish, or varying to black....**obscura** Blake.
Apical margin of the segments with pale pubescence, both above and beneath; pubescence of head and thorax mixed gray and black, the latter predominating, that of abdominal segments 1 and 2 black. **Snoworum** Ckll. and Fox.
27. Head as usual, not as wide as thorax.....28.
Head large, fully as wide as thorax; head, thorax and abdomen from apical portion of segment 2 with pale yellow or fulvous brown pubescence. **aureola** Cress.
28. Head, thorax and abdomen above with fulvous or reddish pubescence....29.
Head and thorax with black pubescence above, the abdomen above from apical half of segment 2 with reddish pubescence, the ground color black.....**gorgon** Blake.
29. Abdomen, except pubescence, entirely or in greater part black.....30.
Abdomen, except segment 1, reddish, with pubescence of the same color; carina of first ventral segment prominently produced anteriorly..**Foxi** Ckll.
30. Pubescence of head, thorax and abdomen above, from apical half of second segment, fulvous; the ground color beneath this pubescence apparently black.....**fulvohirta** Cress.
Pubescence of head, thorax and abdomen above, from apical half of second segment, carmine; the ground color beneath this pubescence reddish. **Townsendi** Ckll.

30. **Mutilla gloriosa** Sauss.

Mutilla gloriosa Saussure, Ann. Soc. Ent. France, vii, 359, pl. 8, fig. 9, ♀, 1867.
Mutilla tecta Cresson, Tr. Am. Ent. Soc., v, 119, ♀, 1875.
Sphærophthalma tecta Blake, ibid, xiii, 216, ♀, 1886.
Sphærophthalma gloriosa Cameron, Biol. Centr. Amer. Hym., ii, 359, 1894.

California and Lower California. Cresson's *Mutilla tecta* is apparently based on an alcoholic specimen of *gloriosa*, which, in fact of the immersion of the specimen, has the pubescence discolored. The ground color of the type specimen of *tecta* is not fuscous as described, but ferruginous.

31. **Mutilla pseudopappus** Ckll.

Sphærophthalma gloriosa Saussure, var. *pseudopappus* Cockerell, Psyche, vii, Suppl., p. 6, 1895, ♀.

New Mexico: Las Cruces (September); Arizona. I am inclined to regard this dark-bodied form as specifically distinct from the red-bodied *gloriosa;* the latter seems restricted to the coast, whereas *pseudopappus* is an inland species. The sculpture of the pygidium also differs in the two species.

32. **Mutilla magna** Cress.

Mutilla magna Cresson, Proc. Ent. Soc. Phila., iv, 385, ♀, 1865,
Sphærophthalma magna Blake, Tr. Am. Ent. Soc., xiii, 214, ♀, 1886.

Lower California; California eastward to Texas and Kansas. The species is subject to much variation in size.

33. **Mutilla Sackenii** Cress.

Mutilla Sackenii Cresson, Proc. Ent. Soc. Phila., iv, 385, ♀, 1865.
Mutilla erudita Cresson, Tr. Am. Ent. Soc., v, 120, ♀, 1875.
Sphærophthalma Sackenii Blake, ibid, xiii, 213, ♀ ♂, 1886.
Sphærophthalma erudita Blake, ibid, xiii, 217, ♀, 1886.

Arizona; Nevada; California; Lower California. *M. erudita* Cresson is apparently not distinct from *Sackenii.* This is not *gloriosa* Saussure as suggested by Dalla Torre in his catalogue.

34. **Mutilla occidentalis** Linné.

Mutilla occidentalis Linné, Syst. Nat., ed. 10, i, 582, 1758, ♀.
Mutilla bifasciata Swederus, Svenska Vet.-Akad. Handlingar, viii, 285, ♂, 1787.
Mutilla coccinea Fabricius, Ent. Syst., ii, 366, 1793.
Sphærophthalma occidentalis Blake, l. c., 223, ♀ ♂, 1886.

Occurs from New Jersey to Florida. It varies considerably in size, females measuring from 16–27 mm.

35. **Mutilla comanche** Blake.

Mutilla (*Sphærophthalma*) *comanche* Blake, l. c., iii, 234, ♀ ♂, 1871.
Mutilla clotho Blake, ibid, iv, 72, ♀, 1872.
Sphærophthalma comanche Blake, ibid, xiii, 211, ♀ ♂, 1886.
Sphærophthalma clotho Blake, ibid, xiii, 212, ♀, 1886.

Florida; Texas; Colorado; Kansas. I am inclined to regard this as a variety or western race of *occidentalis*.

36. **Mutilla orcus** Cress.
Mutilla orcus Cresson, Proc. Ent. Soc. Phila., iv, 428, ♀ ♂, 1865.
Sphærophthalma orcus Blake, l. c., xiii, 209, ♀ ♂, 1886.

Texas westward to New Mexico and Arizona; Mexico: Chihuahua and Lower California.

37. **Mutilla leda** Blake.
Mutilla leda Blake, Tr. Am. Ent. Soc., iv, 72, ♀, 1872.
Sphærophthalma leda Blake, ibid, xiii, 216, ♀, 1886.

Texas. The shape of the thorax does not seem to be at all constant in this species, approaching in some specimens very close to the hexagonal form of the next section.

38. **Mutilla creusa** Cress.
Mutilla creusa Cresson, Proc. Ent. Soc. Phila., iv, 431, ♀, 1865.
Mutilla medea Cresson, ibid, iv, 432, ♀, 1865.
Mutilla bellona Cresson, ibid, iv, 434, ♀, 1865.
Sphærophthalma bellona Blake, Tr. Am. Ent. Soc., xiii, 221, ♀, 1886.
Sphærophthalma creusa Blake, ibid xiii, 223, ♀, 1886.
Sphærophthalma medea Blake, ibid, xiii, 224, ♀, 1886.

Colorado; Texas: Dallas (Boll). Both *medea* and *bellona* are identical, except as to minor color differences, with *creusa;* a series will show the intergradation.

39. **Mutilla ægina** Cress.
Mutilla ægina Proc. Ent. Soc. Phila., iv, 435, ♀, 1865.
Sphærophthalma ægina Blake, Tr. Am. Ent. Soc., xiii, 221, ♀, 1886.

Occurs from Kansas: Wallace Co, 3000 feet (Snow) to Arizona. Some specimens have the pubescence pale ochraceous.

40. **Mutilla clio** Blake.
Mutilla clio Blake, Tr. Am. Ent. Soc., vii, 251, ♀, 1879.
Sphærophthalma clio Blake, ibid, xiii, 214, ♀, 1886.

Vancouver. Only the unique type seen.

41. **Mutilla Sicheliana** Sauss.
Mutilli Sicheliana Saussure, Ann. Soc. Ent. France, 4e. Ser. vii, 360, pl. 8. f. 10, ♀, 1867.
Sphæropothalma Sicheliana Blake, Tr. Am. Ent. Soc., xiii, 217, ♀, 1886.

Mexico (Saussure); Arizona.

The following nine species have the body sparsely pubescent, and, as a rule, reddish; the head is narrower than thorax:

42. **Mutilla quadriguttata** Say.

? Mutilla vagans Fabricius, Ent. Syst. Suppl., 282, ♀, 1798.
Mutilla quadriguttata Say, West. Quart. Reporter, ii, 74, ♀, 1823.
Mutilla electra Blake, Tr. Am. Ent. Soc., iv, 75, ♀, 1872.
Sphærophthalma quadriguttata Blake, ibid, xiii, 239, ♀, 1886.
Sphærophthalma electra Blake, ibid, xiii, 248, ♀, 1886.
Sphærophthalma quadrigutta var. *biguttata* Cockerell, Ent. New, vi, 63, ♀, 1895.

Texas; Kansas. The legs vary from red to black, and the abdomen has or has not the segments fringed with silvery pubescence. The second dorsal may have four, two or no pale spots, or these may be so indistinct as to be scarcely discernible. The series before me shows the intergradation very nicely.

The var. *biguttata* may be *vagans* Fabricius.

43. **Mutilla ferrugata** Fabr.

Mutilla ferrugata Fabricius, Syst. Piez., 438, ♀, 1804.
Sphærophthalma ferrugata Blake, Tr. Am. Ent. Soc., xiii, 239, ♀, 1886.

Massachusetts; Pennsylvania; Illinois; Wisconsin. This species, although well marked in the shape of ventral carina of first segment, has been confused in collections with several species having a superficial resemblance, *i. e.*, the color of the body. For instance, no less than four species were found under *ferrugata* in the collection of the Am. Entom. Society.

44. **Mutilla vesta** Cress.

Mutilla vesta Cresson, Proc. Ent. Soc. Phila., iv, 436, ♀, 1865.
Sphærophthalma vesta Blake, Tr. Am. Ent. Soc., xiii, 240, ♀, 1886.

This species inhabits the region west and northwest of Texas and Kansas, as far as British Columbia. Specimens from the Eastern States differ only in being less pubescent. *M. macra* (= *hispida*) is perhaps the male of *vesta*.

45. **Mutilla sappho** n. sp.

♀.—Ferruginous, including legs, except tarsi, which are fuscous; second segment with or without two pale spots; head narrower than thorax, with distinct separated punctures, postero-lateral angles rounded; first joint of flagellum distinctly shorter than two following united; thorax elongate, pyriform, reticulated above; carina of first ventral segment somewhat emarginate medially so that it presents a bidentate appearance; second dorsal with elongate punctures, having the appearance of being striato-punctate, the second ventral with deeper, stronger punctures; segments 2–6 fringed with pale pubescence; pygidium black, coarsely striated longitudinally. Length 7–12 mm.

Georgia; Florida: Capron, in March, Lake Worth (Mrs. Slosson). Eleven specimens. In the red legs and apical segments this species may be at once distinguished from *ferrugata*, under which name it will, no doubt, be found in many collections.

46. **Mutilla rugulosa** n. sp.

♀.—Ferruginous, clothed with a sparse, erect, pale pubescence, the apical segment with dense, silvery pubescence; legs brownish; abdomen from apex of second segment black, the latter above with two pale yellow spots; head with confluent punctures, the postero-lateral angles obtuse; first joint of flagellum not as long as two following united; thorax rugose, especially posteriorly; scutellar scale rather prominent; carina of first segment indistinctly bidentate; second dorsal striato-punctate, but sparsely punctured on the space occupied by the yellow spots; pygidium strongly striated longitudinally. Length 6 mm.

Three specimens. Not rare in Southern New Jersey in September.

47. **Mutilla cypris** Blake.

Mutilla (Sphærophthalma) cypris Blake, Tr. Am. Ent. Soc., iii, 246, ♀, 1871.
Mutilla (Sphærophthalma) mutata Blake, ibid, 247, ♀, 1871.
Sphærophthalma cypris Blake, ibid, xiii, 239, ♀, 1886.
Sphærophthalma mutata Blake, ibid, 241, ♀, 1886.

Occurs from New Jersey (August) to Florida; also in Illinois: Algonquin (Nason), and Colorado. The maculation of second dorsal is subject to variation, and the size varies from 6-14 mm. The postero lateral angles of the head are always tuberculate, or with a short carina, by which character the species may be at once distinguished.

48. **Mutilla anguliceps** n. sp.

♀.—Ferruginous, with sparse, pale, erect hairs; abdomen from apex of segment 2 black, this segment above with two pale spots; first three joints of antennæ red, remainder blackish; tarsi fuscous; head seen from front triangular, squarely cut off behind, the postero-lateral angles acutely produced, punctuation strong and distinct; thorax ovato-pyriform, contracted behind from middle; first abdominal segment with a small tooth medially at sides, the ventral carina bidentate; second segment with elongate punctures; pygidium longitudinally striated. Length 8 mm.

Illinois: Algonquin (Nason), July 19th. One specimen. Quite distinct by shape of head.

49. **Mutilla caneo** Blake.

Mutilla caneo Blake. Tr. Am. Ent. Soc., vii, 250, ♀, 1879.
Mutilla mixtura Blake, ibid, 251, ♀, 1879.
Sphærophthalma mixtura Blake, ibid, xiii, 234, ♀, 1886.
Sphærophthalma caneo Blake, ibid, xiii, 241, ♀, 1886.

Texas; Colorado; New Mexico: Las Cruces, September 16th (Cockerell). I can see no differences between *caneo* and *mixtura*, except as to the quantity of pubescence on thorax, which is variable.

50. **Mutilla sparsa** n. sp.

♀.—Ferruginous, clothed with a sparse, erect pubescence, and in addition, the head, thorax and second dorsal above is covered with a thin, appressed, golden pubescence; base and apex of second dorsal and the remaining segments blackish;

apical margins of the segments with silvery pubescence, that on second dorsal broken into three spots, that on dorsals 3–5 spreading over the entire segments medially; head subquadrate, about as wide as thorax, coarsely and confluently punctured; postero-lateral angles rounded; first joint of flagellum about as long as two following united; thorax pyriform, covered above with large punctures; first segment with large punctures, the carina bidentate; second dorsal segment with elongate punctures, those at base coarser and rounder; pygidium longitudinally striated. Length 11 mm.

Colorado. One specimen. This species combines the characteristics of the preceding species, 4-*guttata* to *caneo*, and the following five species. The head is intermediate in size between the two aggregations of species mentioned, and in the pyriform thorax it agrees with *scævola*, etc.

The following five species have the head wider than thorax, the latter more exactly pyriform, and the first segment is more nodose than in *ferrugata* and its allies.

51. **Mutilla Ulkei** Cress.

Mutilla Ulkei Cresson, Proc. Ent. Soc. Phila., iv, 387, ♀, 1865.
Sphærophthalma Ulkei Blake, Tr. Am. Ent. Soc., xiii, 238, ♀, 1886.

Lower California: Cape San Lucas. This is a remarkable species and not closely related to any other boreal American *Mutilla*.

52. **Mutilla texana** Blake.

Mutilla texana Blake, Tr. Am. Ent. Soc., vii, 250, ♀, 1879.
Sphærophthalma texana Blake, ibid, xiii, 212, ♀, 1886.

Texas.

53. **Mutilla scævola** Blake.

Mutilla (*Sphærophthalma*) *scævola* Blake, Tr. Am. Ent. Soc., iii, 247, ♀, 1871.
Sphærophthalma scævola Blake, ibid, xiii, 241, ♀, 1886.

Texas: Fedor, September (Birkmann); Colorado; Kansas: Wallace County, 3000 feet (F. H. Snow).

54. **Mutilla cariniceps** n. sp.

♀.—Ferruginous, sparsely clothed with pale, erect hairs; second dorsal with two pale spots, fuscous or black at base and apex, dorsals 4 and 5 covered with silvery pubescence, segments 3 and following black, second and third ventrals fringed with silvery pubescence; legs blackish or brown; head subquadrate, wider than thorax, strongly and closely punctured, the postero-lateral angles bearing a short carina running inwardly; thorax pyriform, rugosely punctured, tending to reticulate posteriorly; carina of first ventral segment entire, truncate; second dorsal with elongate punctures, the second ventral with the punctures tolerably strong and widely separated; pygidium longitudinally striated. Length 10 mm.

Massachusetts; New Jersey; Pennsylvania. This species will be found in several collections under *scævola;* the latter has not, as yet, been found in the Eastern States.

55. **Mutilla Bollii** n. sp.

♀.—Ferruginous; abdomen from apex of second segment black; legs rufo-piceous; dorsals 3–6 medially and at sides with silvery pubescence, a spot at apex of dorsal segment 2 in the middle and ventrals 2–4 with a fringe, of similar pubescence; head subquadrate, wider than thorax, covered with strong, close punctures, postero-lateral angles rounded, unarmed; thorax broadly pyriform, tending somewhat to hexagonal, coarsely punctured and distinctly; ventral carina of first segment subemarginate; second dorsal coarsely and closely punctured, unicolorous, except apex; second ventral with large, separated punctures; pygidium coriaceous, with some punctures and striæ. Length 12 mm.

Texas: Dallas (Boll). One specimen. In the five preceding species we have the connecting links between the elongated thorax species and those in which the thorax is hexagonal. In *Bollii* the thorax is less pyriform than in *scævola* or *cariniceps* and tends to hexagonal, and the sculpture of the pygidium is more like that of the aggregation of species with hexagonal thorax.

The following twenty-two species are known in the male sex only, and while it is certain that they belong to the *occidentalis* group, they cannot be placed systematically with any degree of certainty:

56. **Mutilla coccineohirta** Blake.

Mutilla (*Sphærophthalma*) *coccineohirta* Blake, l. c., iii, 235, ♂, 1871.
Sphærophthalma coccineohirta Blake, ibid, xiii, 221, ♂, 1886.

California. That which Blake has described, rather vaguely, as the female of this species seems to be *californicus* Rads., and belongs to another section of the group.

57. **Mutilla testaceiventris** n. sp.

♂.—Black, slightly inclining to piceous in places; head and thorax as far as middle segment and abdomen above from middle of segment 2 with long scarlet pubescence; dorsals, from middle of segment 2, with reddish ground color; ventrals 3–7 testaceous, with reddish pubescence; pubescence of remainder of body black; reticulation of middle segment rather large and distinct; carina of first segment strongly angulate medially, the segment tolerably nodose; wings fuscous, third submarginal indistinct, first and second transverso-cubital veins distinctly separated above. Length 8½ mm.

California: Poway. Distinct from *coccineohirta* in the shape of ventral carina of segment 1 (dentate in *coccineohirta*), ground color of abdomen from segment 2 and shape second submarginal cell.

58. **Mutilla ursula** Cress.

Mutilla ursula Cresson, Tr. Am. Ent. Soc., v, 120, ♂, 1875.
Sphærophthalma ursula Blake, ibid. xiii, 218, ♂, 1886.

Texas; Colorado; New Mexico; Arizona; Utah. A specimen,

rather undersized, from British Columbia, sent by Mr. W. H. Harrington, has the fulvous pubescence of thorax thinned to such an extent that the fulvous color is barely visible to the naked eye.

59. **Mutilla ochracea** Blake.

Mutilla ochracea Blake, Tr. Am. Ent. Soc., vii, 247, ♀, 1879.
Sphærophthalma ochracea Blake, ibid, xiii, 228, ♂, 1886 (not ♀; see *M. progne*).

Kansas; Colorado; Nevada; California. That which Blake has described as the female of *ochracea* is not related to the male; it belongs in another section of the genus.

60. **Mutilla bioculata** Cress.

Mutilla bioculata Cresson, Proc. Ent. Soc. Phila., iv, 431, ♂, 1865.
Mutilla bioculata Cresson, Wheeler's Surv. W. 100th Mer., Zool., 709. ♀, 1875.
Sphærophthalma bioculata Blake, l. c., xiii, 224, ♂, 1886.

Texas; Colorado; South Dakota: Pierre. Cresson has described the female of this species which sex I have not seen. It is said to have the head and thorax above and second dorsal segment with long yellowish-ferruginous pubescence, otherwise with black pubescence. Is 7 lines (14 mm.) in length, and was found in Nevada. It may be the same as *creusa*.

This is a variable species as to size, ranging from 12–25 mm. in length.

61. **Mutilla pyrrhus** n. sp.

♂.—Black, segment 2 above and beneath ferruginous, the second dorsal with two large, paler spots; head and thorax above as far as middle segment with fulvous pubescence, that on the apical half of second dorsal segment short and yellower, otherwise the pubescence is black throughout the insect; reticulation of middle segment coarse and irregular; first segment tolerably nodose, with large separated punctures, the ventral carina somewhat produced at both ends so that it is bidentate; wings fuscous, with three distinct submarginal cells, the second nearly as long as the first and widely separated above. Length 14 mm.

Florida: Enterprise, May 11th. One specimen. In the color of segment 2, this species has a superficial resemblance to *castor* and *fenestrata*.

62. **Mutilla phaon** n. sp.

♂.—Black, with black pubescence, except on abdomen from, and inclusive of, second dorsal to apex, ventrals 3–6 laterally with long, bright scarlet pubescence; first segment tolerably nodose, with coarse, confluent punctures, the ventral carina in the form of a blunt angle; punctures of second ventral segment sparse medially; wings fuscous, third submarginal indistinct, the second smaller, though nearly as long as first; first and second transverso-cubital veins separated above by a distance less than that between the base of second submarginal cell and recurrent vein. Length 13 mm.

Arizona. One specimen.

63. **Mutilla chiron** Blake.
Mutilla chiron Blake, Tr. Am. Ent. Soc, iv, 72, ♂, 1872.
Sphærophthalma chiron Blake, ibid, xiii, 220, ♂, 1886.

Texas. It is doubtful if the specimens I have referred to *chiron* really represent that species. These I am inclined to regard as a variety of *ursula*, having the thoracic pubescence black. They agree with Blake's description of *chiron*, except that no mention is made of the pale maculation of dorsal segment 2, and the third submarginal is much less distinct than one would imagine that of *chiron*, judging from the description. The latter might also be applied to the ♂ *zelaya*. Unfortunately the types of *chiron* seem to be absent from the material on which Blake's work is based.

64. **Mutilla zelaya** Blake.
Mutilla zelaya Blake, ibid, iii, 234, ♂, 1871.
Sphærophthalma zelaya Blake, ibid, xiii, 211, ♂, 1886.

Texas; New Mexico: Albuquerque, August (Snow). The ♀ may be described as follows:—Black throughout, with black pubescence, except on dorsals 2–5, which have long fulvous pubescence extending a little onto the ventral segments; head with strong punctures; thorax elongate, broadest anteriorly, scarcely pyriform, above coarsely reticulate, more distinctly posteriorly; first segment above coarsely pitted, the ventral carina strongly bidendate in consequence of a deep mesial emargination. Length 10 mm.

65. **Mutilla castor** Blake.
Mutilla (Sphærophthalma) castor Blake, ibid, iii, 237, ♂, 1871.
Sphærophthalma castor Blake, ibid, xiii, 227, ♂, 1886.

Occurs from Illinois to Texas and Oklahoma Territory. Also in Florida. The color of the first two segments varies from entirely red with paler spots on segment 2 to black, except the pale spots mentioned. This species will, no doubt, be found under the name *fenestrata* Lep. in some collections.

66. **Mutilla Lepeletierii** Fox (n. n. for *fenestrata* Lep. non Klug).
Mutilla fenestrata Lepeletier, de St. Fargeau, Hym., iii, 627, ♂, 1845.
Mutilla (Sphærophthalma) fenestrata Blake, l. c., iii, 238, ♂, 1871.
Sphærophthalma fenestrata Blake, ibid, xiii, 228, ♂, 1886.

Pennsylvania (St. Fargeau); New Jersey: Ocean County (J. B. Smith). It is somewhat difficult to decide from St. Fargeau's description whether Blake's *castor* or the specimens before me are *fenestrata*. Fargeau does not mention paler spots on second seg-

ment, which leads me to believe that I have judged correctly in placing the specimens before me as *fenestrata*, inasmuch as some specimens have no trace of pale spots on segment 2.

67. **Mutilla agenor** n. sp.

♂.—Black, with black pubescence; second dorsal segment with a transverse, broad, reddish yellow fascia, not extending on base or apex; this light-colored portion of the segment with yellowish pubescence; second ventral entirely black; antennæ about as long as head and thorax; first dorsal segment less nodose than in *castor*, rather broad, convex, with large, coarse punctures, the ventral carina a little prominent posteriorly; second dorsal with distinct separated punctures, the second ventral with much larger punctures; wings fuscous, third submarginal cell indistinct, the first and second transverso-cubital veins separated above. Length 10 mm.

Illinois: Algonquin, August 14th (Nason); British Columbia. Two specimens. This is a smaller and comparatively stouter insect than *Lepeletierii*.

68. **Mutilla macra** Cress.

Mutilla macra Cresson, Proc. Ent. Soc. Phila., iv, 429, ♂, 1865.
Sphærophthalma hispida Blake, Tr. Am. Ent. Soc., xiii, 226. ♂, 1886.
Sphærophthalma macra Blake, ibid, 230, ♂, 1886.

New Jersey; Delaware; Illinois: Algonquin, July and August (Nason); Colorado; Montana. Blake's *hispida* and *macra* are inseparable.

69. **Mutilla admetus** Blake.

Mutilla admetus Blake, Tr. Am. Ent. Soc, iv, 74, ♂, 1872.
Sphærophthalma admetis Blake, ibid, xiii, 229, ♂, 1886.

Texas; Colorado; Montana. Varies from 7–13 mm. in length.

70. **Mutilla obscura** Blake.

Mutilla (*Sphæroph.*) *obscura* Blake, Tr. Am. Ent. Soc., iii, 239. ♂, 1871.
Sphærophthalma obscura Blake, ibid, xiii, 231, ♂, 1886.
Sphærophthalma macer (*macerata*) Blake, ibid. 237, 286, ♂, 1886.
Sphærophthalma macera Dalle Torre, Catal, viii, 56, 1897.

Massachusetts (Blake); North Carolina; Texas; Colorado. *M. macer*, which name was subsequently changed to *macerata* by its author, is identical with *obscura*. The size is variable fully as much as in *admetis*. The specimens of *macer* mentioned by Blake as having the pubescence entirely black are referable to *admetus*.

71. **Mutilla apicalata** Blake.

Mutilla (*Sphæroph.*) *apicalata* Blake, Tr. Am. Ent. Soc., iii, 238, ♂, 1871.
Sphærophthalma apicalata Blake, ibid, xiii, 230, ♂, 1887.

Mexico; Texas.

72. **Mutilla creon** Blake.
Mutilla creon Blake, Tr. Am. Ent. Soc., iv, 73, ♂, 1872.
Sphærophthalma creon Blake, ibid, xiii, 228, ♂, 1886.

Texas.

73. **Mutilla eximia** Blake.
Mutilla eximia Blake, Tr. Am. Ent. Soc., xiii, 200, ♂, 1886.

Arizona. This is a typical *Sphœrophthalma,* but was described by Blake as a true *Mutilla.*

74. **Mutilla Snoworum** Ckll. and Fox.
Sphærophthalma Snoworum Cockerell and Fox, Proc. Acad. Nat. Sci. Phila., 135 ♂, 1897.

New Mexico: Albuquerque (Snow).

75. **Mutilla canella** Blake.
Mutilla (Sphæroph.) canella Blake, Tr. Am. Ent. Soc., iii, 239, ♂, 1871.
Sphærophthalma canella Blake, ibid, xiii, 230, ♂, 1886.

Texas; New Jersey: Gloucester County, August 16th.

76. **Mutilla gibbosa** Say.
Mutilla gibbosa Say, Bost. Journ. Nat. Hist., i, 298, ♂, 1836.
Sphærophthalma gibbosa Blake, Tr. Am. Ent. Soc., xiii, 231, ♂, 1886.

Occurs from Massachusetts to Texas and Illinois; Mexico.

77. **Mutilla monticola** Cress.
Mutilla monticola Cresson, Proc. Ent. Soc. Phila., iv, 430, ♂, 1865.
Sphærophthalma monticola Blake, Tr. Am. Ent. Soc., xiii, 226, ♂, 1886.

Colorado. The first segment in this species is scarcely as nodose as in the preceding species, and approaches the form of that of *fulvohirta, townsendi,* etc.

The next series of species has the head at most as wide as thorax.

78. **Mutilla clytemnestra** n. sp.
♀.—Black, the head, thorax and abdomen above with long white hairs similar to that of *gloriosa,* etc.; pubescence of legs and first dorsal black; head as wide as thorax; thorax posteriorly with large, coarse punctures; ventral carina of first segment dentate or angulate medially; second ventral segment rugosely punctured, scabrous; pygidium finely rugose. Length 8 mm.

California: Poway. Three specimens. Differs from *thetis* by larger size, black body and black pubescence of legs.

79. **Mutilla thetis** Blake.
Sphærophthalma thetis Blake, Tr. Am. Ent. Soc., xiii, 214, ♀, 1886.

Arizona. Only the unique type seen.

80. **Mutilla heterochroa** Ckll. and Cas.
Sphærophthalma heterochroa Cockerell and Casad, Ent. News, v, 298, ♀, 1894.

New Mexico: Mesilla and Las Cruces in August and September

(Cockerell); Arizona: Phœnix (H. G. Griffith); California: Riverside (Wickham). The latter specimen is the larger and has the pubescence of upper part of body quite pale in comparison to typical examples.

Mr. Cockerell has suggested the possibility of *S. Foxii* being the male of *heterochroa*.

81. **Mutilla phœnix** n. sp.

♀.—Ferruginous, sides of thorax fuscous; head and thorax above with coarse, dense, dirty-white pubescence, that on thorax posteriorly sparse and black; legs with pale pubescence; second segment apically, and the remaining segments with coarse, dirty-white pubescence; a patch of black hair on third dorsal; head about as wide as thorax, the latter hexagonal, with coarse reticulations on upper part of posterior surface; second dorsal with large, separated punctures, nude, except for the hair on apex; punctures of second ventral sparse, but much feebler than those of the dorsal surface; pygidium black, rugose. Length 7 mm.

Arizona: Phœnix (H. G. Griffith). Two specimens.

82. **Mutilla scabra** Fox.

Sphærophthalma scaber Fox, Proc. Cal. Acad. (2), iv, 94, ♀, 1894.
Mutilla scabra Dalla Torre, Catal. Hym., viii, 84, ♀, 1897.

Lower California.

83. **Mutilla Dugesii** Ckll. and Cas.

Sphærophthalma Dugesii Cockerell and Casad, Ent. News, v, 294, ♀.

Mexico: Guanajuato (Ckll. and Cas.); Texas: Big Springs (Wickham).

84. **Mutilla progne** n. sp.

Sphærophthalma ocracea Blake, Tr. Am. Ent. Soc., xiii, 228, ♀ (non ♂), 1886.

♀.—Black, head, thorax and abdomen above with tolerably long, shaggy, ochraceous pubescence; other pubescence black; head about as wide as thorax, cribrose with coarse punctures; first joint of flagellum about as long as two following united; thorax hexagonal, coarsely punctured; ventral carina of first segment prominently arched medially; second ventral with large, scattered punctures, with a small prominence medially near the base; pygidium finely rugose. Length 9-12 mm.

Occurs from New Mexico to California. This species has been described as the female of *ochracea*, which I do not believe it to be.

85. **Mutilla venifica** Blake.

Sphærophthalma venifica Blake, Tr. Am. Ent. Soc., xiii, 210, ♀, 1886.

California: Santa Barbara. Only the unique type seen. The pubescence is quite sparse, the specimen having a rubbed appearance.

86. **Mutilla californica** Rad.

Mutilla californica Radoszkowski, Hor. Soc. Ent. Ross, i, 86, T. ii, f. 7, ♀, 1861.
Sphærophthalma californica Blake, Tr. Am. Ent. Soc., xiii, 219, ♀, 1886.

Kansas; Texas; Colorado; Dakota; Wyoming; New Mexico; Arizona; California; Hudson Bay Territory. Specimens are subject to some variation as to size and color of pubescence. Two from Arizona and Wyoming differ only in having pubescence closer, appressed and not rough and shaggy as in most specimens.

The following two species have the head very large, wider than thorax; the latter is shorter and more truly hexagonal than in *californica,* etc., and on the whole the form is broader; pygidium rugose or coriaceous.

87. **Mutilla pacifica** Cress.

Mutilla pacifica Cresson, Tr. Am. Ent. Soc., v, 120, ♀, 1875.
Sphærophthalma pacifica Blake, ibid, xiii, 217, ♀, 1886.

Colorado and California; Lower California. Varies considerably in size.

88. **Mutilla aureola** Cress.

Mutilla aureola Cresson, Proc. Ent. Soc. Phila., iv, 386, ♀, 1865.
Sphærophthalma parmosa Blake, Tr. Am. Soc., xiii, 210, ♀, 1886.
Sphærophthalma aureola Blake, ibid, 215, ♀, 1886.
Sphærophthalma mollissima Blake, ibid, 215, ♂ ♀, 1886.

Nevada; California. Blake's types of *mollissima* were said to have come from Colorado; at present they bear no locality label, and I am inclined to doubt if they came from Colorado. The color of the pubescence varies from pale yellow to a ochraceous.

M. gorgon has the pygidium longitudinally striated, otherwise closely agreeing with *pacifica* and *aureola.*

89. **Mutilla gorgon** Blake.

Mutilla (Sphærophthalma) gorgon Blake, Tr. Am. Ent. Soc., iii, 233, ♀, 1871.
Mutilla tisiphone Blake, ibid, vii, 249, ♀, 1879.
Sphærophthalma gorgon Blake, ibid, xiii, 210, ♀, 1886.
Sphærophthalma tisiphone Blake, ibid.

Texas: Dallas (Boll); Arizona; New Mexico: Mesilla, June 11th (Cockerell): Albuquerque in August (Snow). Blake's *tisiphone* is apparently a rubbed specimen with paler pubescence. Specimens vary from 11–17 mm. in size. One Texan example, a female, has the reddish hairs covering the upper part of head and thorax as well as abdomen. The ♂ may be described as follows:

♂.—Black, with black pubescence, except on abdomen above from middle of second segment, and on ventrals 3 and following at sides, where it is reddish; head with distinct punctures, much narrower than thorax; punctures of dorsulum coarser than those of head; middle segment covered with deep, but not very large reticulations; calcaria black; first segment coarsely punctured, not very nodose, the sinus between it and segment 2 not deep, ventral carina acutely angular; second dorsal with punctures much finer and closer than on segment 1, the second ventral with large, scattered punctures; wings fuliginous, second submarginal cell nearly triangular in consequence of the first and second transverso-cubital veins nearly uniting above. Length 14 mm.

Group *pennsylvanica.*

Here we have a group of four species combining the characteristics of *Sphœrophthalma* and *Photopsis.* The eyes are irregularly rounded or reniform in male, variable in size, rounded in female. Ocelli variable in size, rounded, small in *scæva* and *pennsylvanica*, more as in groups *imperialis* and *auripilis.* Mandibles heavy and short in male, more or less concave on upper surface, as in groups *imperialis* and *anthophorœ*, presenting above a scooped-out appearance, in the female the mandible is much as in group *occidentalis*, with an internal tooth before apex First segment of female not quite sessile with the second, but more so than in the preceding group, in the males more or loss nodose. Thorax of female elongato pyriform. Tibial spurs not serrated. Marginal cell of a shape between subtruncate and acuminate, two distinct submarginal cells, the third, if present, quite faint. No trace of a pygidium in female.

It is difficult to draw a line of demarkation between the males of this and the following group. The shape of the ocelli is, as a rule, different in the two, but is hardly sufficiently constant to prove of much importance. The only available character between these groups, on which the separation of the two may be based, is the total absence of a pygidium in the female of group *pennsylvanica.*

This group formed part of Blake's genus *Sphœrophthalma.*

MALES.

Greater part of body black, with black pubescence, the second segment only reddish (ocelli small).....**scæva** Blake.
Greater part of body castaneous.....2.
2. Wings fuscous.....3.
Wings subhyaline, darker apically; pubescence of abdomen griseus.
jason n. sp.
3. Abdomen from apex of segment 2 black, with black pubescence; ocelli small.
pennsylvanica Lep.
Abdomen entirely castaneous, clothed with golden pubescence; ocelli rather large.....**auripilis** Blake.

FEMALES.

Entirely ferruginous; first and second segments banded with white pubescene, that of apical segments fuscous.....**balteola** Blake.
Head and thorax ferruginous; abdomen and legs black; first segment not banded. **virguncula** Blake.

90. **Mutilla scæva** Blake.
Mutilla (Sphærophthalma) scæva Blake, Tr. Am. Ent. Soc., iii, 232, ♂, 1871.
Sphærophthalma scæva Blake, ibid, xiii, 207, ♂, 1886.

Pennsylvania: Philadelphia; Virginia; Texas.

91. **Mutilla pennsylvanica** Lep.
Mutilla pennsylvanica Lepeletier de St. Fargeau, Hym., iii, 628, ♂, 1845.
Sphæropothalma pennsylvanica Blake, Tr. Am. Ent. Soc., xiii, 208, ♂, 1886.

North Carolina; Florida; Texas. Recorded from Pennsylvania by Lep. de St. Fargeau.

92. **Mutilla auripilis** Blake.
Mutilla (Sphærophthalma) auripilis Blake, Tr. Am. Ent. Soc., iii, 233, ♂.
Sphærophthalma auripilis Radoszkowski, Hor. Soc. Ent. Ross., xix, 32, T. 6, f. 47, 1885; Blake, Tr. Am. Ent. Soc., xiii, 208, ♂, 1886.

Texas; Oklahoma Territory.

93. **Mutilla jason** n. sp.
♂.—Castaneous, clothed throughout with pale pubescence, that on last two segments somewhat darker; legs and flagellum blackish; antennæ about as long as the head and that portion of thorax anterior to middle segment; wings subhyaline, darker apically; two submarginal cells, the third barely discernible; marginal cell acuminate. Length 11 mm.

Texas. One specimen belonging to the U. S. National Museum. Easily separated from its allies by pale wings and pubescence.

94. **Mutilla balteola** Blake.
Mutilla (Sphærophthalma) balteola Blake, Tr. Am. Ent. Soc., iii, 248, ♀, 1871.
Sphærophthalma balteola Blake, ibid, xiii, 242, ♀, 1886.

Texas; Oklahoma Territory.

95. **Mutilla virguncula** Blake.
Sphærophthalma virguncula Blake, Tr. Am. Ent Soc., xiii, 253, ♀, 1886.

New Mexico. Only the unique type seen.

Group *imperialis* (= *Photopsis* Blake pt.).

In the males the ocelli are large, prominent, more or less reniform, the eyes large, irregularly rounded, tending to subovate, and usually subemarginate anteriorly and posteriorly, finely facetted; in the female subovate, also facetted. Mandibles of male as in group *pennsylvanica*, in the female straight, with a small tooth internally

before apex, altogether much as in group *occidentalis*. First abdominal segment in male more or less nodose, varying in length, with coarser punctures than the second, always considerably narrower; in female it is always smaller than second, not uniting evenly with it. Tibial spurs slender, not serrated. Marginal cell lanceolate or subtruncate; two submarginals, with a very faint trace of a third in some species. Pygidium of female large, finely granulated.

The chief points of difference between the males of this and group *anthophoræ* lie in the sculpture and shape of first abdominal segments. Both sexes of no species have been observed, whereas in group *anthophoræ* the sexes of at least one species have been correlated.

This group is the American representative of the European *Tricholabiodes* Rad., differing in having no trace of a third submarginal cell.

MALES.

First segment seen from the side distinctly nodose.....2.
First segment scarcely nodose, gradually broadened from base to apex (head, thorax and first segment castaneous brown, segments 2 et seq. black; legs and antennæ pallid).....**nigriventris** Fox.
2. Pubescence more or less golden or yellowish.....3.
Pubescence pale or subfuscous.....4.
3. Pubescence on dorsulum and abdominal segments 2 and following yellowish, otherwise pale fuscous; head and legs black; wings more or less fuscous on apical third.....**imperialis** Blake.
Pubescence throughout yellowish; the insect entirely fulvous, sometimes becoming quite dark; wings dark fuscous throughout.
Edwardsii Cress.
4. First segment forming a rather distinct node at apex.....5.
First segment more of a convex, rather than nodose, form at apex, or it may be described as slightly nodose.....10.
5. Abdomen more or less blackish or fuscous.....6.
Abdomen not at all dark.....8.
6. Abdomen from base of segment 2 black; dorsulum not dark.....7.
Abdomen from apex of segment 3, femora, tibiæ and dorsulum blackish; head not dark; antennæ and tarsi testaceous.....**clara** Cress.
7. Legs and antennæ pale testaceous; first segment elongate, rather narrow.
mesillensis Ckll.
Legs and antennæ black; first segment broader.....**bellerophon** n. sp.
8. Wings fuscous in greater part; pubescence subfuscous..**ferruginosa** D. T.
Wings hyaline in greater part.....9.
9. Wings crossed by a fuscous cloud from the stigma, the latter dark. Length 6-9 mm.....**danaus** Blake.
Wings clear, with a yellowish caste; stigma pale. Length 15 mm.
helicaon n. sp.

10. Abdomen castaneous brown, if at all darker the apical (4-7) may be fuscous..11.
Abdomen black from and inclusive of segment 2.....15.
11. Head considerably produced and rapidly narrowed behind, somewhat rhombiform, but rounded at the occiput; first abdominal segment banded with white pubescence at apex, segments 4-7 fuscous.
albicincta n. sp.
Head broadly rounded behind; first segment not banded with white, the apical segments castaneous brown.....12.
12. Insect throughout very pale, especially legs and antennæ, clothed throughout with a long, erect, whitish, rather dense pubescence; stigma pale.
territas Ckll.
Insect castaneous brown; pubescence sparser and darker, though pale; stigma dark.....13.
13. Antennæ much shorter than head and thorax united..**brevicornis** n. sp.
Antennæ as long or nearly as long as head and thorax united.....14.
14. First segment about three times wider at apex that at base, evenly convex, its punctuation separated.....**melicausa** Blake.
First segment about two times wider at apex than at base, its punctuation confluent.....**orestes** n. sp.
15. First segment about three times wider at apex than at base, its punctuation separated; head concolorous with thorax; legs pale....**pluto** n. sp.
First segment elongate, subpetiolate, barely twice as wide at apex as at base, its punctuation more or less confluent.....16.
16. Head transverse, broadly truncate behind, black; space between hind ocelli much greater than that between them and eyes; antennæ shorter than head and thorax; legs dark.....**nokomis** Blake.
Head considerably produced and rounded behind, concolorous with thorax; space between hind ocelli slightly less than that between them and eyes; antennæ slender, about as long as head and thorax; legs pale.
Hubbardii n. sp.

FEMALES.

Insect above, at least on head and thorax, clothed with a dense pubescence concealing the sculpture.....2.
Insect with a sparser pubescence.....5.
2. Pubescence reddish or golden.....3.
Pubescence of head, thorax and abdomen above from middle of second segment golden yellow; ground color dark, the anterior half of second dorsal segment with long black hairs.....**marpesia** Blake.
3. Abdominal segments 3-6 above and beneath more or less with pale pubescence.4.
Abdominal segments 3-6, as well as the entire upper surface of abdomen, with golden pubescence; ground color reddish, sides of thorax black.
zenobia Blake
4. Pubescence of thorax above and second dorsal segment coppery red, the long, erect pubescence paler; head covered with an appressed, grayish pubescence, as well as erect hairs; ground color of abdomen reddish, dorsals 3-5 fringed medially with yellowish pubescence....**arota** Cress.
Pubescence of thorax above and second dorsal, except laterally and posteriorly, fulvous; head anteriorly with grayish pubescence, above with fulvous; ground color of abdomen black, the fulvous pubescence of the second

dorsal not completely covering the segment, leaving a black space laterally and posteriorly; segments 2–5 fringed with white pubescence at apex..... **ceres** n. sp.

5. Insect rather densely clothed with a fine, silky, pale pubescence, especially the head and apical segments, that on head and thorax above short, dense and appressed, elsewhere long and paler, on abdomen from apex of segment 2 dense and whiter; second dorsal covered with strong punctures, not coarse as in other species; pygidium finely rugose longitudinally; form rather broad, the thorax subquadrate. **halcyone** n. sp.

Insect less densely pubescent, in some species fairly well clothed, however; second dorsal with very strong punctures, or rugose; pygidium at most finely granulated.....6.

6. Second dorsal segment punctured throughout.....8.

Second dorsal segment coarsely rugose toward the base (insect reddish).....7.

7. Thorax pyriform, rugosely punctured above; second dorsal basally with strong, longitudinal rugæ or folds..... **loadamia** n. sp.

Thorax short, subquadrate, coarsely rugose above; second dorsal basally coarsely sculptured, covered with rough tubercles or projections, apically rugoso-punctate..... **dirce** n. sp.

8. Head entirely and thorax more or less covered with a close, appressed pubescence, the entire body clothed with an erect, whitish pubescence, especially dense on abdomen, basally and apically and sides of thorax...9.

Head and thorax bare or sparsely pubescent.....10.

9. Body pale ferruginous, legs pale; dorsals 3 and 4 with a patch of black-brown pubescence, strongly contrasting with the pale pubescence, with which it is surrounded..... **diomeda** n. sp.

Body dark ferruginous, including legs; apical dorsal segment with sparse, pale pubescence..... **erato** Blake.

10. Second dorsal with elongate, more or less confluent punctures.....11.

Second dorsal with separated punctures (thorax rugose above, truncate behind)..... **nanula** D. T.

11. Head with strong, distinct punctures; thorax rugoso-punctate; legs blackish..... **albopilosa** Blake.

Head finely rugose; thorax above rugose; legs red; eyes unusually convex. **myrrha** n. sp.

The six following species have the first segment strongly nodose, much as in the *occidentalis* group:

96. **Mutilla imperialis** Blake.

Agama imperialis Blake, Tr. Am. Ent. Soc., iii, 260, ♂, 1871.
Photopsis imperialis Blake, ibid, xiii, 265, ♂, 1886.

Texas.

97. **Mutilla Edwardsii** Cress.

Mutilla Edwardsii Cresson, Tr. Am. Ent. Soc., v. 119, ♂, 1875.
Sphærophthalma Edwardsii Blake, ibid, xiii, 208, ♂, 1886.

Oregon; Washington; California.

Imperialis and *Edwardsii* have the appearance of the males of

group *occidentalis* (=*Sphœrophthalma*); but while the next four species agree with them in shape of first segment, they are more of the type of group *anthophoræ*, which I regard as typical *Photopsis*.

98. **Mutilla clara** Cress.

Mutilla clara Cresson, Proc. Ent. Soc. Phila., iv, 439, ♂, 1865.
Agama clara Blake, Tr. Am. Ent. Soc., iii, 261, ♂, 1871.
Photopsis clara Blake, ibid, xiii, 262, ♂, 1886.

Colorado. Only the unique type seen. The fore wings have a small, pale, fuscous spot near posterior margin medially.

99. **Mutilla danaus** Blake.

Agama danaus Blake, Tr. Am. Ent. Soc., iii, 261, ♂, 1871.
Photopsis danaus Blake, ibid, xiii, 261, ♂, 1886.

Texas. Easily recognized from other species of this group by fasciate wings and strongly nodose first segment.

100. **Mutilla bellerophon** n. sp.

♂.—Head, thorax and first segment castaneous; head sometimes in part, legs and abdomen, from and including segment 2, black; antennæ as long or longer than head and thorax, flagellum fuscous; head with strong, separated punctures, broadly rounded behind; space between hind ocelli distinctly less than that between them and eyes; first abdominal segment distinctly nodose, coarsely punctured, considerably widened apically; second dorsal with scattered punctures, closer basally; dorsals 3-6 finely and closely punctured; second ventral with large, separated, even punctures; wings subhyaline, stigma black, nervures testaceous; entire insect clothed with an erect, pale pubescence. Length 6½ mm.

Arizona; New Mexico: Santa Fé in July (Cockerell). Two specimens.

101. **Mutilla mesillensis** Ckll.

Photopsis mesillensis Cockerell, Entomologist, xxx, 137, ♂.

New Mexico: Mesilla, July 30th. Mr. Cockerell kindly loaned me the type of this species.

102. **Mutilla helicaon** n. sp.

♂.—Entirely pale castaneous; legs and flagellum more testaceous; head with strong, separated punctures, rather well produced and narrowed behind eyes, hind margin subrounded; antennæ shorter than head and thorax; space between hind ocelli, if anything, slightly greater than that between them and eyes; punctures of dorsulum large and separated; first abdominal segment rather short, nodose, coarsely punctured, in length shorter than middle segment; second and following dorsals sparsely punctured, the second ventral more strongly; wings subhyaline, slightly yellowish, nervures and stigma pale, recurrent vein received by second submarginal cell between base and middle; entire insect clothed with an erect, pale pubescence. Length 15 mm.

Nevada. One example.

103. **Mutilla albicincta** n. sp.

♂.—Pale castaneous, abdominal segments 3 and following fuscous; ocellar region black; head considerably narrowed and produced behind eyes, so that when viewed from above it has a somewhat triangular form, punctures not strong, scattered; antennæ nearly as long as head and thorax; space between hind ocelli a little greater than that between them and eyes; mesopleuræ with an irregularly oblique ridge from base of wings downward; first abdominal segment with coarse, scarcely confluent punctures, nodose, but not strongly, being rather more of a strongly convex form at apex, longer and narrower than in *helicaon*, but still not as long as middle segment; punctures of rest of abdomen sparse and not very strong, those on second ventral strongest; wings subhyaline, not yellowish, stigma dark, nervures pale; entire insect clothed with erect, white pubescence, and apex of segments 1–6 with a fringe of white pubescence. Length 11 mm.

Arizona. One example.

104. **Mutilla brevicornis** n. sp.

♂.—Castaneous; apical segments but little, if anything, darker; legs and antennæ testaceous; head with separated punctures, rather square when viewed from above in consequence of not contracting very much behind eyes, posterior margin rather evenly rounded; space between hind ocelli less than that between them and eyes; antennæ short, about equal to length of head and that portion of thorax anterior to middle segment; dorsulum with large, separated punctures; mesopleuræ not ridged; first abdominal segment with large, well-separated punctures, rather broad and strongly convex, rather than nodose at apex; second segment above sparsely, beneath strongly punctured, remaining segments finely and closely; wings subhyaline, nervures pale, stigma darker; entire insect with erect, pale (not white) pubescesce, apex of second or second and third segments with a fringe of white pubescence. Length 11 mm.

Texas; Montana. Has been confused with *melicausa* by writers.

105. **Mutilla melicausa** Blake.

Agama melicausa Blake, Tr. Am. Ent. Soc., iii, 240, ♂, 1871.
Photopsis melicausa Blake, ibid, xiii, 262, ♀, 1886.

Texas.

106. **Mutilla territa** Ckll.

Photopsis territus Cockerell, Ent. News, v, 200, ♂, 1894.

New Mexico: Las Cruces. The head seems to be almost impunctate in this species.

107. **Mutilla pluto** n. sp.

♂.—Head, thorax and first abdominal segment castaneous, remainder of abdomen fuscous or black, with segments margined with testaceous at apex; antennæ and legs paler than thorax; head rather well produced behind eyes, not much contracted, subrounded, punctures strong and separated; space between hind ocelli distinctly less than that between them and eyes; antennæ shorter than head and thorax, its length somewhat greater than the head and that portion of thorax anterior to middle segment; first abdominal segment broad, widened at least three times apically, strongly convex, the punctures confluent basally, distinct toward apex; second segment above shining, sparsely punctured, except

laterally, beneath with strong, scattered punctures; remaining segments finely and closely punctured; wings subhyaline, slightly yellowish, nervures and tigma pale; entire insect clothed with pale pubescence, a whitish fringe at apex of second or second and third segments. Length 11–12 mm.

Texas. Five specimens. This species has been confused with *nokomis*, but is quite distinct by shape of first abdominal segment.

108. **Mutilla nokomis** Blake.

Agama nokomis Blake, Tr. Am. Ent. Soc., iii, 260, ♂, 1871.
Photopsis nokomis Blake, ibid, xiii, 259, ♂, 1886.

Arizona. Only the unique type seen.

109. **Mutilla Hubbardii** n. sp.

♂.—Head, thorax and first abdominal segment castaneous; abdomen black from segment 2; legs and antennæ testaceous, the flagellum and hind legs pertaining to fuscous; pubescence whitish; head considerably produced and rounded behind eyes; space between hind ocelli slightly less, if anything, than that between them and eyes; antennæ about as long as head and thorax united; first abdominal segment elongate, subpetiolate, nodose, but not strongly at apex, its punctures large and somewhat confluent; second dorsal with large, sparse punctures laterally, those of the second ventral larger and more abundant; wings subhyaline, nervures testaceous, stigma dark; second submarginal cell shorter than first, the second transverso-cubital vein straight. Length 8–10 mm.

Arizona: Chiric Mts. and Fort Grant in August (H. G. Hubbard). Two specimens in collection U. S. National Museum.

110. **Mutilla orestes** n. sp.

♂.—Pale castaneous; legs and antennæ paler, clothed with a rather sparse, pale pubescence throughout, the abdominal segments 2–5 with a short, whitish fringe; head subquadrate, considerably produced, but scarcely narrowed behind eyes, almost truncate behind, punctures tolerably strong and separated; space between hind ocelli very slightly less than that between them and eyes; antennæ fully as long as head and thorax united; first abdominal segment rather narrow, not more than twice wider at apex than at base, convex or subnodose at apex; punctures coarse and confluent; second dorsal shining, sparsely punctured, the ventral moiety more distinctly; wings subhyaline, somewhat yellowish, stigma dark, nervures pale. Length 14 mm.

One specimen with no locality label. Inhabits the Southwestern United States, probably.

111. **Mutilla ferruginosa** D. T.

Agama ferruginea Blake (nec Smith), Tr. Am. Ent. Soc., vii, 254, ♂, 1879.
Photopsis ferruginea Blake, ibid, xiii, 264, ♂, 1886.
Mutilla ferruginosa Dalla Torre, Cat. Hym., viii, 40, 1897.

Nevada.

112. **Mutilla nigriventris** Fox.

Photopsis nigriventris Fox, Pr. Cal. Ac. Sci. (2), iv, 5, ♂, 1893.

Lower California. The first segment in this species is only gently

convex, and approaches in shape that of the males of the next group; the segment is strongly punctured, however, and for that reason I have placed the species in group *imperialis*.

The following thirteen species are no doubt the females of some of the species just enumerated under group *imperialis:*

113. **Mutilla arota** Cress.

Mutilla arota Cresson, Tr. Am. Ent. Soc., v, 120, ♀, 1875.
Sphærophthalma arota Blake, ibid, xiii, 218, ♀, 1886.

California: San Diego. Only the unique type seen.

114. **Mutilla ceres** n. sp.

♀.—Ground color: head and thorax ferruginous; abdomen and legs black; head, except vertex, covered with close, appressed, grayish pubescence; vertex, thorax and second dorsal, except at sides and apex, with fulvous pubescence; segments 2-5 with a fringe of white pubescence; remainder of insect with erect, pale pubescence, that on tarsi somewhat golden; punctures of second abdominal segment above and beneath very large and separated; pygidium finely granulated, delicately margined laterally. Length 8 mm.

Arizona. One specimen.

115. **Mutilla zenobia** Blake.

Mutilla zenobia Blake, Tr. Am. Ent. Soc., vii, 250, ♀, 1879.
Sphærophthalma zenobia Blake, ibid, xiii, 220, ♀, 1886.

California.

116. **Mutilla marpesia** Blake.

Mutilla marpesia Blake, Tr. Am. Ent. Soc., vii, 246, ♀, 1879.
Sphærophthalma marpesia Blake, ibid, xiii, 218, ♀, 1886.
Sphærophthalma luteola Blake, ibid, xiii, 235, ♀, 1886.

Kansas (Snow); Utah. Only the two original types seen. It seems that *marpesia* and *luteola* were described from the same specimens.

117. **Mutilla halcyone** n. sp.

♀.—Entirely ferruginous, clothed with pale hair, that on head and thorax above close and appressed, on the abdomen from apex of segment 2 dense and whiter, elsewhere longer and erect, the first segment with a white band at apex; legs rather robust; thorax short, subquadrate; sides with few punctures; second dorsal segment with strong punctures, which appear more or less confluent in consequence of a thin, appressed pubescence, with which the segment is covered; second ventral with stronger punctures; pygidium finely rugose longitudinally. Length 9 mm.

One specimen without precise locality. Occurs probably in the Southwestern United States; very likely in Texas.

118. **Mutilla diomeda** n. sp.

♀.—Entirely ferruginous, clothed with pale pubescence, that on head and pos-

terior half of thorax close and appressed, segments 2-5 fringed with white pubescence, except dorsals 3-5, which are clothed medially with black-brown pubescence, elsewhere the pubescence erect; first segment not banded with white; antennæ thick, first and second joints of flagellum about equal in length; thorax elongate, somewhat pyriform; legs robust; second dorsal covered with strong, separated punctures, those of second ventral stronger; pygidium apparently striated longitudinally. Length 7 mm.

Texas. One specimen.

119. **Mutilla erato** Blake.

Mutilla erato Blake, Tr. Am. Ent. Soc., vii, 251, ♀, 1879.
Sphærophthalma erato Blake, ibid, xiii, 213, ♀, 1886.

Texas. Only the original type specimens seen.

120. **Mutilla albopilosa** Blake.

Mutilla albipilosa Blake, Tr. Am. Ent. Soc., iv, 74, ♀, 1872.
Sphærophthalma albipilosa Blake, ibid, 241, ♀, 1886.

Texas.

121. **Mutilla laodamia** n. sp.

♀.—Ferruginous, clothed with a thin, rather short, pale pubescence, that on thorax above pertaining to yellow; segments 2-5 fringed with whitish pubescence: head with coarse, confluent punctures; first joint of flagellum distinctly longer than second; thorax elongate, pyriform, rugosely punctured above, sides with large punctures; legs comparatively slender; second dorsal segment with large, separated punctures, and at base with coarse, longitudinal rugæ or folds; second ventral with large punctures, the basal median carina strong; third segment strongly punctured, the others rather finely and closely; pygidium finely granulated, not margined. Length 11 mm.

Arizona. One specimen.

122. **Mutilla dirce** n. sp.

♀.—Ferruginous, legs and antennæ rather testaceous; pubescence pale and erect, abdominal segments 2-5 fringed with whitish; head rugoso-punctate, with a thin, appressed pubescence; first joint of flagellum a little shorter than second; thorax short, subtruncate behind, sides rounded, its upper surface covered with rough projections or tubercles; second dorsal segment basally roughened like the thorax, on apical half strongly punctured; second ventral with coarse, irregular punctures, those on remaining segments finer; pygidium finely margined, obtuse at apex, finely granulated. Length 7 mm.

Arizona: Tucson (Wickham). One specimen.

123. **Mutilla myrrha** n. sp.

♀.—Ferruginous, second dorsal apically yellowish; pubescence scant; head finely rugoso-punctate; eyes prominent, unusually convex; first joint of flagellum longer than second; thorax pyriform, rugose above, especially posteriorly, where there are several coarse, transverse folds; second dorsal covered with strong, elongate, more or less confluent punctures, those on second ventral more separated; pygidium margined, subacute at apex, sculpture indistinct, apparently finely striated longitudinally. Length 6 mm.

Colorado: Fort Collins (Gillette). This species bears a close resemblance to *M. caneo* Blake.

124. **Mutilla nanula** D. T.

Mutilla pygmæa Blake, Tr. Am. Ent. Soc, vii, 250, ♀, 1879 (nec Gerstaecker).
Sphærophthalma pygmæa Blake, ibid, xiii, 253, ♀, 1886.
Mutilla nanula Dalla Torre, Cat. Hym., vii, 65,1897.

Texas; Nevada; Colorado. I have only seen specimens from the latter region.

Group *anthophoræ.*

Very similar to group *imperialis,* but with the first and second abdominal segments of female uniting evenly, sessile, the male having the first segment not nodose, but convex, and not more coarsely punctured than the second.

This group formed part of Blake's genus *Photopsis* (= *Agama* Blake), and seems to be the American representative of the European subgenus *Pseudophotopsis* André, from which it differs by the unarmed postscutellum. The species known in the female sex, when hitherto described, have been in nearly every case referred to *Sphærophthalma;* this has also been the case with the females of group *imperialis.*

MALES.

First abdominal segment rather suddenly and distinctly narrowed anterior to its stigma, the punctuation of the second dorsal, as a rule, becoming sparser medially.....2.

First abdominal segment not distinctly contracted anterior to its stigma, but rather evenly narrowed its entire length, the punctuation of second dorsal rather even throughout.....18.

2. First abdominal segment rather narrow and elongate, contracting rather sharply on basal half, its apical width considerably less than that of the second segment, so that the latter is rather sharply contracted to meet it.....3.

First abdominal segment shorter and broader, not contracting very much on basal half, its apical width greater, more nearly sessile with second..10.

3. Wings subhyaline, at the most slightly tinged with yellow.....4.

Wings subfuscous, pubescence of abdomen yellowish.....9.

4. Head not much narrowed behind eyes, at least not enough to make it triangular from above.....5.

Head considerably narrowed and produced behind eyes, apparently triangular when viewed from above; space between hind ocelli greater than that between them and eyes; "wings yellowish-hyaline."

triangularis Blake.

5. Apical abdominal segments more or less fuscous.....7.

Apical segments concolorous with remainder of abdomen, pale castaneous; first and second dorsal segments almost impunctate or nearly so....6.

6. Rather densely pubescent; legs and antennæ pale; space between hind ocelli less than that between them and eyes. Length 14 mm...**ceyx** n. sp.
Pubescence thin; legs and antennæ testaceous-brown; space between hind ocelli a little greater than that between them and eyes. Length 9-10 mm.....**amphion** n. sp.
7. Antennæ and legs pale; first and second dorsal segments impunctate; space between hind ocelli less than that between them and eyes.....8.
Antennæ and legs more or less fuscous; first and second dorsal segments punctured, the latter very sparsely; space between hind ocelli about equal to that between them and eyes.....**concolor** Cress.
8. Head distinctly narrowed behind eyes; wings not yellowish. Length 10 mm. **coloradensis** D. T.
Head broad, not narrowed behind eyes; wings tinged with yellow. Length 16 mm.....**Blakei** Fox (nec Cam.).
9. No black marking in the thoracic sutures, or about the coxæ. Length 8 mm.....**contrahenda** D. T.
Sutures of thorax, especially between scutellum and middle segment and about the coxæ, black. Length 12 mm.....**contrahenda?** var?
10. Wings subhyaline, at most faintly yellow.....11.
Wings more or less subfuscous, or yellow, or yellowish with subfuscous clouding.....14.
11. Head broad, scarcely narrowed behind eyes; legs and antennæ testaceo-fuscous, apical segments usually fuscous.....**uro** Blake.
Head narrowed behind eyes; legs and antennæ pale.....12.
12. Abdomen dark castaneous-brown.....**palamedes** n. sp.
Abdomen pale castaneous.....13.
13. Space between hind ocelli distinctly greater than that between them and eyes; that portion of head behind the latter somewhat semielliptic in shape.....**juxta** Blake.
Space between hind ocelli slightly less than that between them and eyes; head rather square behind eyes.....**infelix** D. T.
14. Body more or less blackish.....16.
Body pale castaneous.....15.
15. Wings with a yellowish tinge, faintly margined with fuscous, a dark rounded cloud in middle of posterior margin of anteriors: pubescence pale; head evenly rounded behind.....**nebulosa** Blake.
Wings broadly and distinctly margined with fuscous; pubescence yellowish; head square behind.....**unicolor** Cress.
16. Entirely black-brown; wings yellow.....**mendica** Blake.
Not entirely dark, the black confined to thorax on sides and beneath, legs and first segment.....17.
17. Head, thorax and abdomen clothed with a reddish pubescence; abdomen entirely castaneous; scape and pedicel testaceous; flagellum black; wings broadly margined with fuscous.....**anthophoræ** Ashm
Head, thorax and abdomen with a pale yellowish pubescence; first segment black; antennæ concolorous throughout, testaceous-fuscous; "wings yellowish hyaline, clouded about the middle and apex." **rustica** Blake.
18. Last dorsal segment distinctly margined laterally.....19.
Last dorsal segment smooth, not carinate or margined.....20.

19. Head large, broad, squarely and considerably produced behind eyes; space between hind ocelli equal to but little more than half that between them and eyes; first dorsal segment not banded with white pubescence; legs testaceous.....**pretiosissima** D. T.
Head ordinary rounded behind; space between hind ocelli about equal to that between them and eyes; first dorsal segment banded at apex with white pubescence; legs dark.....**adonis** n. sp.
20. First abdominal segment distinctly longer than it is broad at apex, not altogether sessile with the second.....21.
First abdominal segment shorter and broader, its length nearly equalled by its width at apex, nearly sessile with second.....27.
21. Second dorsal segment distinctly punctured throughout.....22.
Second dorsal segment sparsely or not punctured medially.....24.
22. Ventral carina of first segment even, not prominent posteriorly.....23.
Ventral carina of first segment prominent or produced posteriorly, so that it is bisinuous, or bidentate.....**pallida** Blake.
23. Space between hind ocelli slightly less than that between them and eyes; first segment rather strongly and evenly punctured; legs dark.
tapajos Blake.
Space between hind ocelli distinct less than that between them and eyes; first segment sparsely punctured apically; legs testaceous.
aulus Blake.
24. Insect testaceous brown, venation dark, at least the stigma.....25.
Insect pale yellow, venation very pale, so as to be almost indistinct.....26.
25. Legs rather dark; thorax castaneous; abdomen from second segment blackish; first segment rather strongly convex at apex.**Madejskii** D. T.
Legs pale; head and thorax of a paler color than abdomen, but the latter is not blackish; first segment scarcely convex at apex..**alemon** n. sp.
26. Length 6–7 mm.; middle segment reticulated; form elongate.
acontius n. sp.
Length about 3 mm.; middle segment not reticulated; form shorter.
Ashmeadii Fox.
27. Insect castaneous.....28.
Insect black; wings pale fusco-hyaline.....**thamyras** n. sp.
28. Wings subhyaline, not fuscous; head rather finely punctured; legs concolorous with body.....**hyalina** Blake.
Wings crossed by a fuscous cloud beyond stigma; head strongly punctured; legs dark.....**sarpedon** n. sp.

FEMALES.

Insect more or less clothed with a dense, appressed pubescence, in addition to the longer, erect hairs.....2.
Insect without appressed pubescence, with erect hairs only.....6.
2. Second dorsal with appressed pubescence, which is quite long throughout; first joint of flagellum nearly as long as two following joints, pedicel short.....3.
Second dorsal with erect hairs only, the head and thorax with short, appressed pubescence, that on apical segments longer, ferruginous; first joint of flagellum but little longer than the second, the pedicel elongate, equalling it in length.....**hypermnestra** n. sp.

3. Pubescence scarlet, grading into fulvous in some specimens (ground color black).....**anthophoræ** Ashm.
Pubescence pale golden.....4.
4. Greater part of body (sides of thorax, abdomen, legs) black; thorax tolerably elongate and pyriform; pubescence rather coarse. Length 12 mm. **auraria** Blake.
Greater part of body reddish; thorax shorter, more quadrate; pubescence silky. Length under 7 mm.....5.
5. Thorax anteriorly a little wider than head, rather short; ground color fusco-ferruginous.....**aspasia** Blake.
Thorax anteriorly, if anything, narrower than head, rather elongate; ground color pale ferruginous.....**phædra** Blake.
6. Thorax short, truncate behind, its upper surface not much longer than wide..7.
Thorax elongate.....8.
7. Thorax above rugoso-punctate, the punctures of second dorsal segment at base strong, apically becoming weak and sparse; a band of white pubescence at apex of segments 1–4; color deep ferruginous.**erigone** n. sp.
Thorax with tolerably strong, separated punctures, the second dorsal similarly punctured, the punctures even throughout; no white bands on abdomen, but a sparse, silvery pubescence on second dorsal; color pale, ferruginous.....**ilione** n. sp.
8. Thorax oblong, truncate and but little narrowed behind (ferruginous, legs testaceous, apical segments fuscous; pubescence sparse). Length 4 mm. **myrmicoides** Ckll.
Thorax pyriform, or considerably narrowed behind, where it is more or less rounded.....9.
9. Entirely pale ferruginous, with long, rather dense, pale hair; second dorsal sparsely punctured.....**zephyritis** n. sp.
Head, thorax and first segment ferruginous, remainder of abdomen and greater part of legs black; pubescence rather short; second dorsal with strong, evenly separated punctures..**sancta-feæ** Ckll. and Fox.

The first seven species have the first abdominal segment rather elongate and narrow, scarcely sessile with second, and distinctly contracted anteriorly from middle.

125. **Mutilla ceyx** n. sp.

♂.—Dark testaceous, clothed with pale pubescence; antennæ and legs paler; head broad, not much narrowed and gently rounded behind; space between hind ocelli but little less than that between them and eyes: antennæ slender, a little longer than head and thorax united, first joint of flagellum almost as long as second, the scape longer than pedicel and first flagellum joint united; reticulation of middle segment coarse, above at base with three longitudinal, strong ridges, forming two smooth areas; first abdominal segment rather long, sparsely punctured, narrowed considerably from about middle to base; second dorsal sparsely punctured at sides, smooth medially; second ventral sparsely punctured; apical segments densely pubescent; wings subhyaline, nervures and stigma testaceous. Length 14 mm.

Lower California: El Paraiso (May), and Calmalli Mines (April).

Two specimens collected by Chas. D. Haines. This species resembles *M. nebulosus,* under which name it is recorded in Proc. Calif. Acad. Sci. (2), iv, 5, 1894, but differs in shape of first abdominal segment.

126. **Mutilla coloradensis** D. T.

Photopsis abdominalis Blake (nec Westwood), Tr. Am. Ent. Soc., xiii, 275 ♂.
Mutilla coloradensis Dalla Torre, Cat. Hym., viii, 25, ♂, 1897.

Colorado. Only the unique type seen.

127. **Mutilla concolor** Cress.

Mutilla concolor Cresson, Proc. Ent. Soc. Phila., iv, 439, ♂, 1865.
Agama concolor Blake, Tr. Am. Ent. Soc., iii, 262, ♂, 1871.
Photopsis concolor Blake, ibid, xiii, 265, ♂, 1886.

Colorado; Texas.

128. **Mutilla Blakei** Fox.

Photopsis Blakei Fox, Proc. Cal. Ac. Sci. (2), vi, 6, ♂, 1893.
Mutilla gautschii Dalla Torre, Cat. Hym., viii, 43, ♂, 1897.

Lower California. The name *Blakei* Fox, given in 1893, has precedence over *Blakei* Cameron, which did not appear until 1894. Dalla Torre's proposition to rename my species *gautschii* is therefore quite uncalled for.

129. **Mutilla amphion** n. sp.

♂.—Castaneous, with pale pubescence; legs and antennæ more testaceous; head narrowed and rather evenly rounded behind, a little narrower than thorax; space between hind ocelli slightly greater than that between them and eyes; antennæ about as long as head and thorax, first joint of flagellum almost as long as second, the scape longer than the pedicel and first flagellum joint; reticulation of middle segment coarse, the two smooth basal areas distinct, but the ridges enclosing them not so strong; first segment elongate, rather slender, sparsely punctured, narrowed anteriorly from middle; second dorsal very sparsely punctured, the second ventral more distinctly punctured, but still not strongly; abdomen not banded with pubescence; wings subhyaline, faintly fuscous in vicinity of marginal cell and middle of hind margin of fore wings, nervures and stigma testaceous. Length 10 mm.

Nevada. Two specimens.

130. **Mutilla triangularis** Blake.

Agama triangularis Blake, Tr. Am. Ent. Soc., ii, 262, ♂, 1871.
Photopsis triangularis Blake, ibid, xiii, 263, ♂, 1886.

Nevada. Only the unique type seen. Quite distinct by shape of head.

131. **Mutilla contrahenda** D. T.

Agama contracta Blake (nec Say), Tr. Am. Ent. Soc., viii, 253, ♂, 1879.
Photopsis contracta Blake, ibid, xiii, 265, ♂, 1886.

Nevada. A specimen from British Columbia, sent by Mr. W. H. Harrington, is larger and has the sutures of thorax blackish; but I can see no structural differences.

The following nine species have the first abdominal segment shorter and more nearly sessile with the second, thereby approaching the species which immediately follow them, differing, however, in that the segment mentioned is considerably contracted anterior to its middle, as in the preceding species of the group.

132. **Mutilla palamedes** n. sp.

♂.—Head and thorax pale castaneous; abdomen dark-castaneous brown, the first segment paler; legs and antennæ testaceous; head narrowed and rather evenly rounded behind, hardly as wide as thorax; space between hind ocelli about equal to that between them and eyes; antennæ scarcely as long as head and thorax, the first joint of flagellum shorter than second, the scape nearly one-third longer than the pedicel and first flagellum joint; reticulation of middle segment tolerably coarse, coarser than in *uro*, the basal smooth areas scarcely distinquishable from the surrounding reticulation; first abdominal segment rather broad and convex, especially apically, with large, separated punctures; second dorsal very sparsely punctured, the punctures of second ventral large and sparse; abdomen without bands of pubescence; wings subhyaline, without fuscous spots, rather strongly iridescent, nervures and stigma testaceous. Length 8 mm.

Texas. One specimen.

133. **Mutilla uro** Blake.

Agama uro Blake, Tr. Am. Ent. Soc., vii, 253, ♂, 1879.
Photopsis uro Blake, ibid, xiii, 273, ♂, 1886.

Texas

134. **Mutilla juxta** Blake.

Agama juxta Blake, Tr. Am. Ent. Soc, iv, 76, ♂, 1872.
Photopsis juxta Blake, ibid, xiii, 270, ♂, 1886.

Texas.

135. **Mutilla infelix** D. T.

Photopsis inconspicuus Blake (nec *Mutilla inconspicuus* Sm.), Tr. Am. Ent. Soc., xiii, 272, ♂, 1886.
Mutilla infelix Dalla Torre, Cat. Hym., viii, 50, ♂, 1897.

California; Lower California.

136. **Mutilla nebulosa** Blake.

Photopsis nebulosus Blake, Tr. Am. Ent. Soc. xiii, 275, ♂, 1886.

California.

137. **Mutilla unicolor** Cress.

Mutilla unicolor Cresson, Proc. Ent. Soc. Phila., iv, 389, ♂, 1865.
Agama unicolor Blake, Tr. Am. Ent. Soc., iii, 261, ♂, 1871.
Photopsis unicolor Blake, ibid, xiii, 261, ♂, 1886.
Mutilla monochroa Dalla Torre, Cat. Hym., viii, 63, ♂, 1897.

California. Dalla Torre, supposing the genus *Myrmosa* a synonym of *Mutilla*, changed the name of this species to *monochroa*, as there is a *Myrmosa unicolor*, which was described prior to the *Mutilla unicolor*. *Myrmosa* is a good genus however.

138. **Mutilla anthophoræ** Ashm.

Sphærophthalma anthophoræ Ashmead, Proc. South. Calif. Acad. Sci., i, No. 3, p. 5, ♀ ♂, 1897.

California. This species is especially interesting, in view of the fact that both sexes are known, having been bred from the cells of a bee, *Aanthophora*.

139. **Mutilla rustica** Blake.

Agama rustica Blake, Tr. Am. Ent. Soc., vii, 252, ♂, 1879.
Photopsis rustica Blake, ibid, xiii, 271, ♂, 1886.

California. Only the unique type seen.

140. **Mutilla mendica** Blake.

Agama mendica Blake, Tr. Am. Ent. Soc., iii, 259, ♂, 1871.
Photopsis mendica Blake, ibid, xiii, 259, ♂, 1886.

Nevada.

The following eleven species have the first segment evenly narrowed its entire length and not suddenly contracted before its middle, and is more sessile with the second segment, being quite short and broad in some species:

141. **Mutilla pretiosissima** D. T.

Photopsis venustus Blake, Tr. Am. Ent. Soc., xiii, 270, ♂, 1886 (nec *Mutilla venustus* Smith).
Mutilla pretiosissima Dalla Torre, Cat. Hym., viii, 74, ♂, 1897.

Arizona. Only the unique type seen. The peculiar flat head in this species is similar to that of the species of the genus *Lyda*.

142. **Mutilla adonis** n. sp.

♂.—Castaneous brown, clothed with erect, white pubescence, the abdominal segments fringed or banded with pubescence of the same color; femora and tibiæ blackish, coxæ and tarsi testaceous; second segment apically and following segments more or less fuscous; head about as wide as thorax, rounded behind; space between hind ocelli about equal to that between them and eyes, if anything, slightly less; antennæ fuscous above, pale beneath, the first joint of flagellum not two-thirds as long as second, the scape about one-quarter longer than the combined length of the pedicel and first flagellum joint and strongly punctured; basal areas of middle segment large and distinct, reticulation large; first abdominal segment evenly and strongly punctured, almost sessile with second, the sides straight, not suddenly contracted anterior to middle; punctures of second dorsal but little sparser medially; pygidium distinctly margined laterally; wings subhyaline, without fuscous spots, nervures testaceous, stigma blackish. Length 15 mm.

New Mexico: Las Cruces, September, 1894 (Cockerell). One specimen.

143. **Mutilla tapajos** Blake.

Agama tapajos Blake, Tr. Am. Ent. Soc., iii, 262. ♂, 1871.
Agama astynax Blake, ibid, vii, 254, ♂, 1879.
Photopsis tapajos Blake, ibid, xiii, 269, ♂, 1886,
Photopsis astynax Blake, ibid, xiii, 272, ♂, 1887.

Texas. There seems to be no appreciable differences between *tapajos* and *astynax*.

144. **Mutilla aulus** Blake.

Agama aulus Blake, Tr. Am. Ent. Soc., iv, 75, ♂, 1872.
Photopsis aulus Blake, ibid, xiii, 270, ♂, 1886.

Texas. Only the unique type seen.

145. **Mutilla pallida** Blake.

Agama pallida Blake, Tr. Am. Ent. Soc., iii, 263, ♀, 1871.
Photopsis pallida Blake, ibid, xiii, 275, ♂, 1886.

Texas.

146. **Mutilla Madejskii** D. T.

Agama bicolor Blake, Tr. Am. Ent. Soc., vii, 252, ♂, 1879 (nec *Mutilla bicolor* Pallas).
Photopsis bicolor Blake, ibid, xiii, 271, ♂, 1886.
Mutilla madejskii Dalla Torre, Cat. Hym., viii, 56, ♂, 1897.

Texas; Arizona.

147. **Mutilla alemon** n. sp.

♂.—Testaceous, slightly brownish, clothed with whitish hairs; legs and antennæ much paler; head rounded behind, wider than thorax, finely punctured; space between hind ocelli slightly less than that between them and eyes; antennæ hardly as long as head and thorax united, scape about one-third longer than the pedicel and first flagellum joint united; basal areas of middle segment distinct, almost as long as its upper surface; first abdominal segment indistinctly punctured, sides straight, not rounded anteriorly from middle, distinctly longer than broad at apex; second dorsal smooth medially, sparsely punctured laterally, the second ventral sparsely punctured throughout; all the segments fringed at apex with short, whitish hair; wings subhyaline, strong, iridescent, without fuscous spots, nervures and stigma testaceous, the latter darker. Length 6-7 mm.

New Mexico: Las Cruces and S. Augustine (Cockerell). Four specimens.

148. **Mutilla acontius** n. sp.

♂.—Yellowish throughout, with thin, pale pubescence; tips of mandibles black; head about as wide as thorax, rather evenly roundly behind and with large punctures; space between hind ocelli slightly less than that between them and eyes; antennæ hardly as long as head and thorax united, the scape about

one-quarter longer than pedicel and first flagellum joint united; middle segment with a broad, central, smooth area, reaching from base two-thirds to the apex, the reticulation feeble and small; first abdominal segment sparsely punctured, rather narrow and convex apically, sides not narrowed anteriorly, from middle straight; second dorsal apparently impunctate, second ventral sparsely punctured; segments not fringed; wings subhyaline, iridescent, nervures and stigma yellowish. Length 5–7 mm.

New Mexico: Las Cruces (Cockerell). Two specimens.

149. **Mutilla hyalina** Blake.

Agama hyalina Blake, Tr. Am. Ent. Soc., iii, 263, ♂. 1871.
Agama minuta Blake, ibid, iv, 76, ♂, 1872.
Photopsis minuta Blake, ibid, xiii, 272, ♀, 1886.
Photopsis hyalina Blake, ibid, xiii, 274, ♂, 1886.

Texas. There seems to be no specific difference between *hyalina* and *minuta*. The latter averages smaller in size.

150. **Mutilla sarpedon** n. sp.

♂.—Reddish castaneous, clothed with whitish pubescence; legs and flagellum blackish; head at most as wide as thorax, strongly punctured, rather square behind eyes; space between hind ocelli less than that between them and eyes; antennæ shorter than head and thorax united, first joint of flagellum nearly as long as second, the scape nearly twice as long as the pedicel and first flagellum joint united; thorax strongly punctured, especially the middle segment, which, unlike most species of the group, is not reticulate, unless the strong punctures, with which it is covered, may be said to form a reticulation, at the base medially are two elongate, parallel, smooth areas; first segment short and broad, sparsely punctured, practically sessile with second; second segment more strongly punctured, especially beneath; segments fringed with a white pubescence, which is more evident when viewed laterally; wings subhyaline, the anteriors crossed by a broad fuscous cloud between middle and apex, nervures dark, stigma black. Length 6–10 mm.

Texas. Eleven specimens. I found these confused with *M. danaus*, to which it is only superficially similar.

151. **Mutilla thamyras** n. sp.

♂.—Black, clothed with a thin, pale pubescence; legs browner; head rounded behind; space between hind ocelli about equal to that between them and eyes; antennæ shorter than head and thorax, the first joint of flagellum considerably shorter than second, the scape twice as long as pedicel and first flagellum joint; thorax strongly punctured; middle segment covered with large, deep punctures, with two elongate, parallel, smooth, basal areas; first abdominal segment sparsely punctured, tolerably sessile with second, comparatively narrowly than in *hyalina* or *sarpedon;* second dorsal sparsely punctured medially, at the sides and on second ventral strongly punctured; segments not fringed; wings subhyaline, slightly fuscous, nervures dark, stigma black. Length 5½ mm.

Texas. One specimen.

The following nine species are known in the female sex only:

152. **Mutilla auraria** Blake.
Mutilla auraria Blake, Tr. Am. Ent. Soc., vii, 248, ♀, 1879.
Sphærophthalma auraria Blake, ibid, xiii, 218, ♀, 1886.

Nevada. Only the unique type seen.

153. **Mutilla aspasia** Blake.
Mutilla aspasia Blake, Tr. Am. Ent. Soc., vii. 250, ♀, 1879.
Sphærophthalma aspasia Blake, xiii, 220, ♀, 1886.

Nevada.

154. **Mutilla phædra** Blake.
Mutilla phædra Blake, Tr. Am. Ent. Soc., vii, 251, ♀, 1879.
Sphærophthalma phædra Blake, ibid, xiii, 219, ♀, 1886.

Nevada. Only the unique type seen.

155. **Mutilla hypermnestra** n. sp.

♀.—Pale ferruginous, clothed above with appressed, dense pubescence, except on second dorsal segment, which has long, erect hairs only; the appressed pubescence pale golden; pubescence of segments 3 and following dense; entire insect with long erect hairs; head not as wide as thorax; first joint of flagellum but little longer than the second, the pedicel elongate, equalling it in length; scape about as long as the following four joints united; thorax short, truncate and narrowed behind, the sculpture of dorsal surface hidden by pubescence; first segment of abdomen short, sessile with second, the latter above with shallow punctures, which are more distinct on ventral surface; pygidium distinctly margined, very finely rugose. Length 3–5 mm.

California: Poway. Eleven specimens.

156. **Mutilla erigone** n. sp.

♀.—Ferruginous, thinly clothed with erect, pale pubescence; abdominal segments fringed with white pubescence apically; head barely as wide as thorax, rugoso-punctate; thorax quadrate, short and broad, truncate and a little narrowed behind, rugoso-punctate above; first abdominal segment sessile with second; second dorsal strongly punctured basally, the punctures becoming sparser and feebler toward apex; pygidium small, not margined, finely granulated. Length 5 mm.

Colorado. One specimen.

157. **Mutilla ilione** n. sp.

♀.—Pale ferruginous, clothed with a sparse, appressed, silvery pubescence and erect, white hairs; abdominal segments not fringed; legs testaceous; head about as wide as thorax, with distinct, separated punctures; first joint of flagellum nearly as long as following two joints united; thorax quadrate, short and broad, a little narrowed posteriorly, where it is broadly truncate, the upper surface more finely punctured than head, except at apex, where it is reticulated: first abdominal segment short, sessile with second, the latter above with the sculpture indistinct, but apparently punctured, beneath the segment is sparsely punctured; pygidium not margined, coriaceous. Length 4 mm.

Texas: Fedor, Lee County (Birkman). Two specimens.

158. **Mutilla myrmicoides** Ckll.

Mutilla parvula Blake, Tr. Am. Ent. Soc., xiii, 206, ♀, 1886 (nec *Mutilla parvula* Fabr.).

Sphærophthalma myrmicoides Cockerell, Ent. News, vi, 62, ♀, 1695.

Alabama; Texas; Colorado. Cockerell's *myrmicoides* is synonymous with *parvula* Blake, but as the latter name is preoccupied, will have to be adopted for this species.

159. **Mutilla zephyritis** n. sp.

♀.—Ferruginous, clothed with a long, tolerably dense, pale pubescence; abdominal segment 2 and following with a fringe of pale hair; legs paler than body; head with coarse, confluent punctures, about as wide as thorax; first joint of flagellum about one-quarter longer than second; thorax pyriform, obtuse behind, rugoso-punctate above; first abdominal segment sessile with second, the latter above with sparse, rather feeble punctures, on the ventral surface the punctures are much stronger and less scattered; pygidium sharply margined laterally, its sculpture indistinct. Length 7 mm.

California: Los Angeles County in May (Coquillett). One specimen belonging to the U. S. National Museum.

160. **Mutilla sanctæ-feæ** Ckll. and Fox.

Mutilla sanctæ-feæ Cockerell and Fox, Proc. Acad. Nat. Sci. Phila., 137, ♀, 1897.

New Mexico. Only the unique type seen.

Group *hexagona* (= *Mutilla* Blake, pt.).

Eyes strongly ovate, facetted, emarginate on inner margin in the male. Mandibles bidentate, emarginate on outer margin in the male, or rather with a blunt process near the base, which, in at least one species, is scarcely developed. Abdomen with segments 1 and 2 sessile, uniting evenly. Thorax of female oblong.

MALES.

Process at base of mandibles largely developed, rarely wanting.....2.
Process at base of mandibles absent or rudimentary, the emargination therefore small.....7.
2. Pubescence of abdomen blackish or griseus, last ventral plate bituberculate..3.
Pubescence of abdomen yellow.....4.
3. Head and thorax entirely black, with a mixed black and griseus pubescence; middle segment above with a smooth, median channel. **hexagona** Say.
Head and thorax reddish in part.....5.
4. Scape slender, scarcely widened at apex, not barbate; pubescence of head and thorax pale..... **nestor** n. sp.
Scape stouter, distinctly wider at apex, and bearing a bunch of dense, pale hairs; pubescence of head and thorax black.....**Grotei** Blake.

5. Wings fuscous; apical segment reddish; scape nude.....6.
   Wings subhyaline or subfuscous, crossed by a broad, whitish yellow fascia medially; scape beneath with long, white, matted pubescence; segments 3 and following black.....**barbata** n. sp
6. Punctures of first and second dorsal segments tolerably even and strong, the first segment broader than long; middle segment above without a smooth, median channel, or, if present, it is irregular and poorly developed.....**promethea** Blake.
   Punctures of the first and second dorsal segments coarse and widely separated, the first segment longer than broad; middle segment above with a distinct, smooth, median channel.....**floridensis** Blake.
7. Pubescence grayish; ocelli large (wings varying from fuscous to subfuscous). **Sayi** Blake.
   Pubescence reddish yellow throughout; wings fuscous.....**rufa** Lep.

FEMALES.

Space between the eyes on an imaginary line drawn across the middle of front is about equal to twice the length of scape, or very little less; legs and abdomen varying from black to red; segment 2 usually with two silvery spots anteriorly, a silvery margin at apex of all segments. **dubitata** Smith.

Space between eyes by no means as great as twice the length of scape; legs black; abdomen red, with first and third segments entirely, apex of second, and fourth ventral entirely, black; second segment with a silvery margin, which, dorsally, extends forward medially for one-quarter of the length of segment.....**euterpe** Blake.

161. **Mutilla hexagona** Say.

Mutilla hexagona Say, Bost. Journ. Nat. Hist., i, p. 295, ♂; LeConte Ed. Say's Entom., ii, p. 738, 1859.

Mutilla hexagona, other authors.

Mutilla briaxus Blake, Tr. Am. Ent. Soc., iii, p. 227, ♂, 1871.

I have seen specimens of this species from most parts of the United States, excepting the extreme western and southwestern regions. It is also found in Canada and British Columbia. *M. dubitata* is probably the female sex.

M. briaxus does not even represent a variety of this species.

M vigilans Say, referred by some authors as a variety of *hexagona*, evidently belongs near *M. fenestrata*, as far as can be ascertained from the meagre description by Say. At any rate, by the truncated marginal cell it is distinct from *hexagona*, and, moreover, the abdomen is said to be differently colored, agreeing in many respects with the forms allied to *fenestrata*.

162. **Mutilla dubitata** Sm.

Mutilla dubitata Smith, Cat. Hym. Brit. Mus., iii, p. 60, 1855, ♀, and of other authors.

Mutilla ornativentris Cresson, Proc. Ent. Soc. Phila., iv, p. 438, 1865. ♀, and of other authors.

This species has precisely the same geographical distribution as the preceding one.

M. ornativentris Cresson is synonymous with *dubitata*, the color of legs and abdomen varying from black to red, or *vice versa*.

163. **Mutilla nestor** n. sp.

♂.—Head and thorax black, clothed with griseus pubescence, including the first abdominal segment; remainder of abdomen red, clothed with yellowish pubescence; head with deep, separated punctures; scape elongate, curved, but little widened apically, without a brush of dense pubescence; middle segment with a distinct, smooth, shallow channel above in the middle; first abdominal segment slightly longer than it is broad apically, with large, separated punctures, those of the second less strong and sparse medially; remaining segments more finely punctured; last ventral segment tuberculate; wings fuscous. Length 9 mm.

Texas. One specimen. Resembles *Grotei*, but is smaller, scape of antennæ different, etc.

164. **Mutilla Grotei** Bl.

Mutilla Grotei Blake, Tr. Am. Ent. Soc., iii, p. 228, ♂, 1871.

Colorado. I have seen only the unique type of this species.

165. **Mutilla promethea** Bl.

Mutilla promethea Blake, l. c., p. 229, ♂.

Georgia; Florida; Louisiana; Texas. The extent of red and black on thorax is subject to variation. Either this species or *floridensis* is probably the male of *euterpe*.

166. **Mutilla floridensis** Bl.

Mutilla floridensis Blake, l. c., vii, p. 249, ♂, 1879.

Florida; Georgia. This is a less hirsute and smaller species than *promethea*, and the color is of a deeper red. The head varies from black to red. In the shape of first abdominal segment this species stands rather intermediate between the typical forms of group *hexagona* and those of group *scrupea*.

167. **Mutilla Sayi** Bl.

Mutilla Sayi Blake, l. c., iii, p. 229, ♂, 1871.

Texas; Colorado; Montana. Specimens from the two latter States differ from Texan examples in the lighter wings and greater extent of red on thorax.

168. **Mutilla rufa** Lep.

Mutilla rufa Lepeletier de St. Fargeau, Hist. Nat. Ins. Hymen., iii, p. 631, ♂, 1845; Blake, l. c., iii, p. 257, ♂, 1871.

Described originally from Pennsylvania, and Blake gives "Atlantic States" as its habitat. There is but one specimen before me and that without locality.

It is doubtful, in my mind, if the species recognized as *rufa* by Blake is really that species, but the original description is too meagre to permit a positive conclusion in the matter.

169. **Mutilla euterpe** Blake.

Mutilla euterpe Blake, l. c., vii, p. 249, ♀, 1879.

Florida. Only the unique type seen, which was collected at Enterprise, Florida, in May.

170. **Mutilla barbata** n. sp.

♂.—Ferruginous, flagellum, legs and segments 3 and following black; scape yellowish, beneath with long, white hairs; pubescence griseus; flagellum acuminate, the basal joint broad and flat; first segment with large, separated punctures, as is also the second dorsal at base, the punctures becoming sparser medially and closer at apex; wings subfuscous, the superiors crossed by broad, whitish yellow fascia medially. Length 8 mm.

Missouri: Ripley County (P. J. Smith). One specimen sent me by the Rev. Rich'd Kraus, of St. Vincent Abbey, Pennsylvania.

Group *scrupea* (= *Mutilla* Blake, pt.).

Eyes short and broad, facetted, emarginate on inner margin in male. Mandibles bidentate, not emarginate or bearing a process outwardly. Abdominal segment 1 distinctly narrower at apex than second, usually cylindrical. Thorax of female ovate.

The marginal cell tends rather to truncate, and the number of submarginal cells varies from two to three. Only one species, *puteola*, is known in the female sex.

MALES.

Entirely black.....**scrupea** Say.
More or less red.....2.
2. Head and thorax black, abdomen red.....**copano** Blake.
Ferruginous, legs and antennæ black.....**Slossonæ** n. sp.

171. **Mutilla scrupea** Say.

Mutilla scrupea Say, Bost. Jour. Nat. Hist., i, p. 297, 1836, ♂; LeConte Ed. Say's Ent., ii, p. 740, ♂, 1859.
Mutilla scrupea Blake, l. c., p. 230, ♂, 1871.
Mutilla gracilis Blake (not Smith), ibid, p. 231, ♂, 1871.

Connecticut; Delaware; Texas; Colorado; Montana; California. The western specimens are by far the larger, but I am unable to detect any satisfactory character entitling them to specific rank. These are the *gracilis* Blake (not Smith); the true *gracilis* inhabits Mexico, and has a more cylindrical first abdominal segment.

172. **Mutilla copano** Blake.

Mutilla copano Blake, l. c., iii, p. 232, ♂, 1871.

Texas; Mexico.

173. **Mutilla Slossonæ** n. sp.

♂.—Ferruginous, with sparse, pale pubescence; legs and antennæ black; head with coarse, deep punctures; space between hind ocelli not equal to half that between them and eyes; first abdominal segment smaller than second, nodose, coarsely punctured and transversely carinated above, the ventral carina prominently elongated anteriorly; second segment above with large, separated punctures, those of under surface coarser; dorsals 3-7 sharply carinated down middle; wings subfuscous, marginal cell subtruncate; first and second segments with a fascia of white pubescence at apex. Length 8 mm.

Florida (Mrs. A. T. Slosson). One specimen.

174. **Mutilla puteola** Blake.

Mutilla puteola Blake, l. c., p. 252, ♀, 1879.

Texas; Florida: Lake Harney, May; Alabama: Selma, October; Virginia: Pennington Gap. This is probably the female of *scrupea*.

Unidentified Species.

175. **Mutilla argentipilis** Prov.

Sphærophthalma argentipilis Provancher, Add. Hym. Quebec, 251, ♂, 1887.

Florida.

176. **Mutilla erecta** Fox.

Sphærophthalma erecta Fox, Proc. Cal. Acad. (2), iv, 93, ♀, 1894.

Lower California. This species belongs to group *canadensis*. The type is in the coll. Calif. Academy of Sciences, so I have been unable to examine it.

177. **Mutilla frigida** Sm.

Mutilla frigida Smith, Cat. Hym. Brit. Mus., iii, 298, ♀, 1855.
Sphærophthalma frigida Blake, Tr. Am. Ent. Soc., xiii, 239, ♀, 1886.

Arctic America: Great Bear Lake. The position of this species is doubtful from the description. It may be identical with *M. dubitata* Sm., or closely allied.

178. **Mutilla exulans** Fabr.

Mutilla exulans Fabricius, Syst. Ent., 397, 1775.

"Habitat in America." This may not be a boreal American species.

179. **Mutilla versicolor** Fabr.

Mutilla versicolor Fabricius, Syst. Ent., 397, 1775.

"Habitat in America." Dalla Torre in his "Catalogue" gives Florida as the habitat of this species.

180. **Mutilla vagans** Fabr.
Mutilla vagans Fabricius, Ent. Syst. Suppl., 282, ♀, 1798.

Boreal America.

181. **Mutilla secunda** D. T.
Mutilla canadensis Provancher, Add. Hym. Quebec, 250, ♂, 1887.
Mutilla secunda Dalla Torre, Cat. Hym., viii, 84, ♂, 1897.

Canada. This is not the same as *Photopsis canadensis* Provancher, or *Sphærophthalma canadensis* Blake. It belongs to group *hexagona* and may be a variety of that species.

182. **Mutilla contracta** Say.
Mutilla contracta Say, Bost. Jour. N. H., i, 295, ♂, 1836.

Arkansas and Missouri. This is not the *M. contracta* Blake which is identical with *hexagona*. I am inclined to regard *contracta* Say as belonging to the series with tridentate mandibles, as, judging from the description, it has a third submarginal cell similar to the species of that series, notwithstanding that Say described the eyes as emarginate.

183. **Mutilla tertia** D. T.
Photopsis canadensis Provancher, Add. Hym. Quebec, 410, ♂. 1888 (nec Blake).
Mutilla tertia Dalla Torre, Cat. Hym., viii, 91, ♂. 1897.

Canada. This is not the same as *Mutilla canadensis* Provancher.

184. **Mutilla vigilans** Say.
Mutilla vigilans Say.

This species is not identical with *hexagona* Say. See note under *M. hexagona*.

II. Subfamily Thynninæ.

The characters offered herein for the separation of the Mutillinæ and Thynninæ have apparently never been used by previous writers in defining the Mutillidæ and Thynnidæ, which have hitherto been generally regarded as families. The use of these characteristics necessitate the breaking down of old boundaries, so that some genera are relegated thereby from one family, or subfamily, into the other. For instance, the divided thorax of female and armature of tip of male abdomen remove *Myrmosa*, *Methoca*, *Brachycistis* and *Chyphotes* from the Mutillidæ (Mutillinæ) into the Thynnidæ (Thyninnæ), which gives the latter subfamily a strong representation in our fauna.

The Thyninnæ of the United States are divisible into five genera as follows:

FEMALES.

Thorax divided into two parts.
  Ocelli absent.
    Abdomen attached to thorax by a slender petiole.....**Chyphotes** Blake.
    Abdomen sessile with thorax.....**Brachycistis** Fox.
  Ocelli present; abdomen sessile with thorax.....**Myrmosa** Latr.
Thorax divided into three parts.
  Legs slender, not flattened; ocelli present.
    Body strongly punctured; median tibiæ 2-spurred.....**Morsyma** n. g.
    Body smooth, ant-like; median tibiæ 1-spurred.....**Methoca** Latr.
  Legs short, strongly flattened; ocelli absent.....**Glyptometopa** Ashm.

MALES.

Abdomen provided with a curved spine at tip.
  Ocelli enlarged; mandibles stout; venation confined to basal half of wing.
    Median tibiæ 2-spurred.....**Chyphotes** Blake.
    Median tibiæ 1-spurred..... **Brachycistis** Fox.
  Ocelli normal; mandibles slender; venation almost reaching apex of wing.
    Methoca Latr.
Abdomen not spinose at tip.
  Maxillæ small, indistinct.....**Myrmosa** Latr.
  Maxillæ large, elongate, prominent.....**Telephoromyia** Guerin.

The males of *Glytometopa* and *Morsyma* are unknown.

CHYPHOTES Blake.

This genus contained but one species *C. elevatus* Blake, and only the female was known until Mr. Ashmead discovered several species described as *Photopsis* and representing the male sex. These were *Photopsis albipes, belfragei, melaniceps* and *attenuata.* To these should be added *Photopsis nubecula, mellipes* and *picus,* the two latter now being referred to the synonymy. *Mutilla peculiaris* Cresson is also a *Chyphotes.*

FEMALES.

Node of first abdominal segment broader than long, the petiole entering it beneath; no silvery ornamentation; eyes irregularly ovate, smooth and shining.....2.
Node of first segment longer than broad, joined with petiole in such a way as to be continuous with it; body ornamented with silvery pubescence; eyes elongate-ovate, distinctly facetted.....**peculiaris** Cress.
2. Legs more or less dark; third dorsal blackish.....3.
  Legs pale testaceous; abdomen concolorous, not at all black.....4.
3. Second dorsal segment with shallow, scattered punctures, the second ventral with coarse, scattered punctures, those on thorax above tolerably large and separated. Length 9 mm.....**elevatus** Blake.

Second dorsal segment with rather close, coarse punctures, especially toward base; second ventral with sparse, shallow punctures; thorax above with coarse punctures. Length 4 mm.....**punctatus** n. sp.

4. Petiole short, stout, not as long as hind tibia, somewhat curved; second ventral with rather fine, sparse punctures. Length 9 mm.
testaceipes n. sp.

Petiole comparatively longer and slender, as long as hind tibia, straight; second ventral segment with large, scattered punctures. Length 4–6 mm.
petiolatus n. sp.

MALES.

Wings with two submarginal cells.....2.

Wings with three submarginal cells.....5.

2. Second submarginal cell as long as first, not triangular; abdomen coarsely punctured.....3.

Second submarginal cell small, not half the size of first, triangular; swollen portion of first segment rugoso-punctate, the second dorsal with large, separated punctures (head obtusely rounded behind).
attenuata Blake.

3. Head truncate behind, not much produced behind eyes; petiolated portion of first segment shorter than first medial tarsal joint, the enlarged portion broadly ovate; legs as a rule blackish or testaceous-brown.
Belfragei Blake.

Head rounded behind, considerably produced behind eyes.....4.

4. Segments 1 and 2 rugoso-punctate; petiolated portion of first segment, if anything, shorter than first joint of median tarsi; head black.
melaniceps Blake.

Segments 1 and 2 with strong, even, separated punctures; petiolated portion of first segment fully as long as first joint of median tarsi; head concolorous with remainder of insect, castaneous.**peninsularis** n. sp.

5. Third submarginal cell distinctly broadened above; first and second transverso-cubital veins uniting above; stigma usually brownish.
albipes Cress.

Third submarginal cell not or scarcely widened above; first and second transverso-cubital veins somewhat separated above; stigma blackish.
nubecula Cress.

Chyphotes is divisible into two groups or subgenera, one represented by *C. peculiaris* and the other containing all the other species.

1. **Chyphotes elevatus** Blake.

Chyphotes elevatus Blake, Tr. Am. Ent. Soc., xiii, 276, ♀, 1886.
Mutilla elevata Dalla Torre, Cat. Hym., viii, 34, ♀, 1887.

Arizona; New Mexico: Santa Fé, August (Cockerell). The California examples mentioned by Blake are a different species, which I describe as *C. petiolatus.*

2. **Chyphotes punctatus** n. sp.

♀.—Ferruginous, with sparse, white hairs; third dorsal segment and femora

blackish; antennæ and tarsi testaceous; head strongly punctured; thorax rugoso-punctate above; second dorsal segment with strong, rather close punctures, especially toward base, those of first dorsal feebler and sparser, as are likewise those of second ventral. Length 4 mm.

Arizona: Chiric Mts., July 29th (H. H. Hubbard). One specimen in collection of U. S. National Museum.

3. **Chyphotes testaceipes** n. sp.

♀.—Testaceo-ferruginous, clothed with long, palish, not whitish, hairs; abdomen concolorous; legs and antennæ testaceous; punctures of head strong and separated; thorax with strong, separated punctures; petiole short, stout, not as long as hind tibiæ, curved; first and second dorsal segment with separated punctures, less strong and more separated than in *elevatus* and *punctatus;* punctures of second ventral small, sparse and shallow. Length 9 mm.

Arizona: Phoenix (H. G. Griffith). One example. This species is more hairy than either of the two preceding species.

4. **Chyphotes petiolatus** n. sp.

♀.—Testaceo-ferruginous, clothed with long, grayish pubescence, beneath which there is, in some specimens, a shorter, appressed, yellowish pubescence; antennæ and legs testaceous; abdomen concolorous; punctures of head and thorax practically the same as in *C. testaceipes,* perhaps a little closer on thorax; petiole about as long as hind tibiæ, rather slender, straight; first and second dorsal segments with strong, separated, rounded punctures, those on second ventral larger, deeper and sparser, especially sparse medially. Length 4-6 mm.

The following six species are known in the male sex only. Of these *attenuata, Belfragei, peninsularis* and *melaniceps* have two submarginal cells, whereas in *nubecula* and *albipes* there are three submarginals.

5. **Chyphotes Belfragei** Blake.

Agama Belfragei Blake, Tr. Am. Ent. Soc, iii, 263, ♂, 1871.
Photopsis Belfragei ibid, xiii, 263, ♂, 1886.
Mutilla Belfragei Dalla Torre, Cat. Hym., viii, 15, ♂, 1897.

Texas; Arizona; New Mexico.

6. **Chyphotes melaniceps** Blake.

Photopsis melaniceps Blake, Tr. Am. Ent. Soc., xiii, 264, ♂, 1886.
Mutilla melaniceps Dalla Torre, Cat. Hym., viii, 60, ♂, 1897.

The type of this species is without locality label. Blake gave Arizona as its habitat.

7. **Chyphotes peninsularis** n. sp.

♂.—Castaneous-brown, clothed with long, whitish pubescence, which is thickest on abdomen; legs pale testaceous, the antennæ slightly darker; head rounded and considerably produced behind eyes, with distinct, separated punctures; dorsulum punctured about like the head and not as strongly as in *melani-*

ceps; petiolated portion of first abdominal segment fully as long as the first joint of medial tarsi, the enlarged portion elongate-ovate, with rather coarse, close punctures; second dorsal with similar punctures, but they are more separated: third dorsal with sparse, finer punctures; wings subhyaline, slightly yellowish, with a fuscous cloud near apex, nervures and stigma testaceous, two submarginal cells. Length 12 mm.

Lower California. One specimen.

8. **Chyphotes attenuata** Blake.

Agama attenuata Blake, Tr. Am. Ent. Soc., iv, 76, ♂, 1872.
Photopsis attenuata Blake, ibid, xiii, 264, ♂, 1886.
Photopsis mellipes Blake, ibid, xiii, 262, ♂, 1886.
Photopsis picus Cockerell, ibid, xxii, 292, ♂, 1895.
Mutilla picas Dalla Torre, Cat. Hym., viii, 73, ♂, 1897.
Mutilla tenula Dalla Torre, ibid, viii, 91, ♂, 1897.

Texas; Arizona; New Mexico. I have seen the type of *Photopsis picus* Cockerell, and have no doubt as to its identity with *Chyphotes attenuatus,* with which the description agrees. *Photopsis mellipes* Blake, which I formerly held to be identical with *Belfragei,** is the same as *attenuatus.*

9. **Chyphotes albipes** Cress.

Agama albipes Cresson, Tr. Am. Ent. Soc., v, 99, ♂, 1874; Rep. Geogr. and Geol. Explor. and Surv. 100th Mer., v, 711, pl. 33, f. 2, ♂, 1875.
Photopsis albipes Blake, Tr. Am. Ent. Soc., xiii, 268, ♂, 1886.
Mutilla albipes Dalla Torre, Cat. Hym., viii, 7, ♂, 1897.

Nevada; Colorado.

10. **Chyphotes nubeculus** Cress.

Mutilla nubecula Cresson, Proc. Ent. Soc. Phila., iv, 440, ♂, 1865.
Agama nubecula Blake, Tr. Am. Ent. Soc., iii, 264, ♂, 1871.
Photopsis nubecula Blake, ibid, xiii, 266, ♂, 1886.
Mutilla nubecula Dalla Torre, Cat. Hym., viii, 67, ♂, 1897.

Colorado. This species is peculiar by having the fourth and fifth ventral segments furnished with two brush-like bunches of stiff, bristle-like hairs, thereby differing from all the other known species.

M. peculiaris is quite distinct in the shape of first abdominal segment, facetted eyes and silvery ornamentation from the other species of the genus. These characters, in this case, are not of greater value than subgeneric.

11. **Chyphotes peculiaris** Cress.

Mutilla peculiaris Cresson, Tr. Am. Ent. Soc., v. 119, ♀, 1875.
Chyphotes mirabilis Cockerell, Can. Ent., 284, ♀, 1896.

California; New Mexico (Cockerell).

* See article by Cockerell, Tr. Am. Ent. Soc., xxii, 289, 1895.

BRACHYCISTIS Fox.

The two species herein, considered as females of this group, differ from the males in having a two-spurred medial tibia. It is therefore not certain that these are really the female of *Brachycistis*, inasmuch as in the other genera of the family the number of spurs of the tibiæ does not differ in the sexes. Nevertheless, it has been thought advisable to keep the specimens in question in this position until something definite may be learned of their habits, etc. Should they prove not to be *Brachycistis*, then that genus is the only one of the North American Mutillidæ, of which but one sex is known. To be sure, Mr. Ashmead has already characterized the female of this genus as having a one-spurred medial tibiæ, but he does not state on what species this assertion is based; so I take it for granted that the genus was not known to him in the female sex, and that the characterization in question was put forth hypothetically.

MALES.

First abdominal segment elongate, drawn out anteriorly into a slender neck...2.
First abdominal segment short, generally sessile with second, not drawn out into a slender neck anteriorly.....14.

2. Head very small, narrower than thorax; form unusually slender; first segment almost linear.....**ampla** Blake.
   Head at least as wide as thorax; form more robust; first segment varying from a slender, elongate form to almost campanulate.....3.
3. Marginal cell nearly as long as the stigma.....**idotes** Ckll.
   Marginal cell much shorter than stigma, not more than half as long at the most.....4.
4. First segment elongate, its width at apex not by any means as great as half its length.....5.
   First segment shorter, broad at apex, which width is equal, or nearly so, to half the length of the segment.....10.
5. Thorax and abdomen entirely castaneous.....6.
   Thorax and abdomen black or quite dark.....8.
6. Head scarcely narrowed behind, concolorous with thorax (second submarginal cell variable).....**nitida** Cress.
   Head black.....7.
7. First segment slender, at least one quarter longer than second; abdomen not hirsute; thorax, abdomen and legs dark castaneous; head considerably narrowed behind eyes.....**nudus** n. sp.
   First segment stout, not one-quarter longer than second, abdomen sparsely pubescent; thorax and abdomen light castaneous, legs testaceous; antennæ orange; head but little narrowed behind eyes.
   elegantulus Ckll.
8. Stigma of wings pale yellow; legs, except coxæ, mandibles and antennæ, yellowish; thorax brownish or wine colored.....**petiolatus** Fox.

Stigma of wings and legs, except tibiæ and tarsi, black; antennæ variable; body entirely black.....9.

9. Abdomen very sparsely pubescent; second dorsal indistinctly punctured...10.
Abdomen with rather dense, white pubescence; second dorsal with large, separated punctures.....**atrata** Blake

10. Head produced behind eyes, subtruncate behind; third submarginal cell longer than high.....**nigritus** n. sp.
Head evenly rounded behind, not produced behind eyes; third submarginal cell higher than long.....**contiguus** n. sp.

11. Head black.....12.
Head concolorous with thorax.....13.

12. Upper surface of middle segment bounded by a sharp ridge.
carinatus n. sp.
Middle segment not ridged.....**glabrella** Cress.

13. Space between hind ocelli considerably greater than that between them and eyes, the latter black; head narrowed behind....**inæqualis** n. sp.
Space between hind ocelli about equal to that between them and eyes, the latter greenish; head but little narrowed behind.
subquadratus n. sp.

14. Marginal cell at least half as long as stigma; three submarginals.....15.
Marginal cell very small, not half as long as stigma; two submarginals.
perpunctatus Ckll.

15. Third submarginal cell elongate, longer than high.....16.
Third submarginal cell shorter than high or quadrate.....17.

16. Marginal cell fully as long as the stigma; first and second transverso-cubital veins not uniting above.....**æqualis** n. sp.
Marginal cell shorter than stigma; second submarginal cell almost petiolate.
nevadensis n. sp.

17. Body entirely castaneous.....18.
Head black; abdomen fuscous beyond first segment; second submarginal cell petiolate, with a long petiole; third submarginal subquadrate.
indiscretus n. sp.

18. First and second submarginal cells nearly equal in length; space between hind ocelli about equal to that between them and eyes; color dark castaneous.....**castaneus** Cress.
Second submarginal cell triangular, much smaller than first, almost petiolate; space between hind ocelli greater than that between them and eyes.
triangularis n. sp.

19. Castaneous; antennæ and legs testaceous; first and second submarginals nearly equal in length.....**brevis** n. sp.
Black; antennæ brownish; second submarginal cell triangular, smaller than the first.....**perpunctatus** Ckll.

FEMALES.

Dark castaneous; two spots on second segment and one at base of sixth yellow; dorsals 1–3 blackish at apex. Length 6 mm.....**rutilans** Blake.

Testaceo-castaneous; two spots on second dorsal and sixth dorsal at base and apex yellow; third dorsal blackish. Length 4 mm.
bimaculatus n. sp.

1. **Brachycistis amplus** Blake.

Ayama ampla Blake, Tr. Am. Ent. Soc., vii, 253, ♂, 1879.
Photopsis amplus Blake, ibid, xiii, 266, ♂, 1886.
Brachycistis amplus Fox, Ent. News, v, 296, 1894.
Mutilla ampla Dalla Torre, Cat. Hym., viii, 8, 1897.

Colorado: Custer (Cockerell).

2. **Brachycistis idiotes** Ckll.

Brachycistis idiotes Cockerell, Ent. News, vi, 63, ♂, 1895.
Mutilla idiotes Dalla Torre, Cat. Hym., viii, 49, 1898.

New Mexico: Las Cruces, November 21st (Cockerell).

3. **Brachycistis nitidus** Cress.

Agama nitida Cresson, Wheeler's Survey W. 100th Mer., v. 710, ♂, 1875.
Photopsis nitidus Blake, Tr. Am. Ent. Soc., xiii, 267, ♂, 1886.
Photopsis sobrinus Blake, ibid, xiii, 268, ♂, 1886.
Photopsis lepidus Blake, ibid, xiii, 269, ♂, 1886.
Brachycistis nitidus Fox, Ent. News, v, 296, 1894.
Brachycistis lepidus Fox, ibid.
Brachycistis sobrinus Fox, ibid.
Mutilla lepida Dalla Torre, Cat. Hym., viii, 52, 1897.
Mutilla nitida Dalla Torre, ibid, viii, 66, 1897.
Mutilla sobrina Dalla Torre, ibid, viii, 86, 1897.

Colorado; New Mexico. I am unable to detect specific differences in *nitidus*, *sobrinus* and *lepidus*. The convexity of first segment seems to vary, the segment being tolerably flat in *nitida*, and decidedly convex in *lepidus*, the intermediate form existing in *sobrinus*.

4. **Brachycistis nudus** n. sp.

♂.—Dark castaneous, legs darker; head black; antennæ brownish; tarsi testaceous; entire insect almost nude, except for a few hairs on the thorax beneath; head distinctly narrowed behind; space between hind ocelli greater than that between them and eyes; dorsulum indistinctly punctured; middle segment smooth above, posterior surface with large, sparse punctures apically; first abdominal segment strongly punctured basally, elongate, the basal portion quite slender, with the apical portion swollen, so as to make it clavate; remaining segments distinctly punctured, but not closely; wings subhyaline; nervures testaceous; stigma dark brown; second submarginal cell triangular, the first and second transverso-cubital veins uniting above; marginal cell about half as long as the stigma. Length 10 mm.

California. One specimen.

The third submarginal cell is partially obliterated in the specimen before me, which possesses but one superior wing, but from appearances it is quadrate in perfect specimens, and is quite as long as the second submarginal on the cubital nervure.

5. **Brachycistis petiolatus** Fox.

Brachycistis petiolatus Fox, Proc. Calif. Ac. Sc. (2), iv, 8, ♂, 1893.
Mutilla petiolata Dalla Torre, Cat. Hym., viii, 72, 1897.

Lower California: Calmalli Mines, April.

6. **Brachycistis nigritus** n. sp.

♂.—Black, clothed with thin, pale bubescence, especially on abdomen; tibiæ and tarsi pale brownish, the tarsi palest; antennæ brown; head transverse, narrowed behind, but not strongly; space between hind ocelli distinctly greater than that between them and eyes; middle segment with large, shallow punctures posteriorly; first dorsal segment strongly punctured, much broader at apex than at base, strongly convex apically, in length somewhat greater than the second segment, remaining segments with shallow, scattered punctures, those on second ventral largest; wings subhyaline, nervures testaceous, stigma blackish; marginal cell barely half as long as stigma: third submarginal larger than second, but little narrowed above. Length 8-10 mm.

Washington; Nevada. Two specimens.

7. **Brachycistis contiguus** n. sp.

♂.—Close to *nigritus*, but differing by the head being evenly rounded behind, not produced behind eyes; slenderer form; third submarginal cell higher than long, the second usually petiolate or nearly so; middle segment finely punctured posteriorly. Length 7-8 mm.

Nevada. Five specimens.

8. **Brachycistis atratus** Blake.

Agama atrata Blake, Tr. Am. Ent. Soc., vii, 253, ♂, 1879.
Photopsis atrata Blake, ibid, xiii, 268, ♂, 1886.
Mutilla agama Dalla Torre, Cat. Hym., viii, 7, 1897.

Nevada.

9. **Brachycistis elegantulus** Ckll. and Casad.

Brachycistis elegantulus Cockerell and Casad, Ent. News, v, 295, ♂, 1894.
Mutilla elegantula Dalla Torre, Cat. Hym., viii, 34, 1897.

New Mexico: Las Cruces.

10. **Brachycistis inæqualis** n. sp.

♂.—Pale castaneous, sparsely clothed with pale, not whitish pubescence; legs testaceous; antennæ darker; head narrowed behind eyes, subtruncate behind; space between hind ocelli distinctly greater than that between them and eyes, the latter black; first abdominal segment slender basally, but greatly broadened at apex, rather campanulate, covered with shallow, not strong punctures; wings subhyaline, nervures and stigma testaceous, the latter darkest; marginal cell barely half as long as stigma; third submarginal subquadrate, slightly longer than high, the second triangular, shorter than the third on the cubital nervure. Length 10-11 mm.

California: Los Angeles, September. Twelve specimens. Type in collection of U. S. National Museum.

11. **Brachycistis subquadratus** n. sp.

♂.—Pale castaneous, clothed with sparse, pale pubescence; antennæ paler;

legs brownish, tarsi testaceous; head subquadrate, produced, but not much narrowed behind eyes; space between hind ocelli about equal to that between them and eyes, the latter greenish; first abdominal segment not very narrow basally, broadened from near base gradually to apex, sparsely and rather strongly punctured; wings subhyaline; nervures testaceous; stigma dark brown; marginal cell not more than half as long as stigma; third submarginal higher than long, shorter than the second on the cubital nervure; second submarginal cell triangular, the first and second transverso-cubital veins not meeting above. Length 10 mm.

California. One specimen.

12. **Brachycistis glabrella** Cress.

Mutilla glabrella Cresson, Proc. Ent. Soc. Phila., iv, 441, ♂, 1865.
Agama glabrella Blake, Tr. Am. Ent. Soc., iii, 264, ♂, 1871.
Agama alcanor Blake, ibid, iii, 264, ♂, 1871.
Photopsis alcanor Blake, ibid, xiii, 267, ♂, 1886.
Photopsis glabrella Blake, ibid, xiii, 274, ♂, 1886.
Mutilla alcanor Dalla Torre, Cat. Hym., viii, 8, 1897.
Mutilla glabrella Dalla Torre, ibid, viii, 22, 1897.

Colorado; Texas; New Mexico; Arizona; California. *B. alcanor* is apparently not distinct from *glabrella*.

13. **Brachycistis carinatus** n. sp.

♂.—Castaneous, very sparsely pubescent; head black; antennæ and eyes pale castaneous; tarsi rather testaceous; head produced and a little narrowed behind eyes; space between hind ocelli greater than that between them and eyes; dorsulum and scutellum with distinct, sparse punctures; middle segment with a sharp, transverse ridge medially, which runs to the base at sides, thereby enclosing the upper surface, which is rather deeply sulcate down middle; first segment of abdomen long, greatly broadened at apex, slender basally, with sparse punctures; wings subhyaline, nervures and stigma dark brown; marginal cell not two-thirds as long as stigma; third submarginal about as long as high, much larger than the second, which is subtriangular, and much shorter than the third on the cubital nervure; first and second transverso-cubital veins not meeting above. Length 14 mm.

California. One specimen.

The next seven species have the first abdominal segment short and broad, not produced into a slender neck anteriorly.

14. **Brachycistis castaneus** Cress.

Mutilla castanea Cresson, Tr. Am. Ent. Soc., iv, 388, ♂, 1865.
Agama castanea Blake, Tr. Am. Ent. Soc, iii, 264, 1871.
Photopsis castanea Blake, ibid, xiii, 273, 1886.
Mutilla castanea Dalla Torre, Cat. Hym., viii, 21, 1897.

California; Arizona; Lower California.

15. **Brachycistis nevadensis** n. sp.

♂.—Pale castaneus, sparsely clothed with pale, not whitish pubescence; legs

testaceous; antennæ darker; head scarcely narrowed or produced behind eyes, subrounded behind; space between hind ocelli much greater than that between them and eyes; dorsulum and scutellum with distinct, sparse punctures; middle segment with large, shallow punctures posteriorly; first abdominal segment convex, broadened from base to apex, finely punctured medially, more strongly toward sides, in length somewhat longer than second, subpyriform; wings subhyaline, nervures and stigma testaceous; marginal cell nearly two-thirds as long as stigma; third submarginal subquadrate, longer than high; second submarginal small, subpetiolate, much shorter than third on cubital nervure. Length 10 mm.

Nevada. One specimen. The first segment is rather similar to that of *glabrella*, etc., but the basal neck is quite stout, not slender.

16. **Brachycistis indiscretus** n. sp.

♂.—Head black; thorax and first segment pale castaneous; segments 2 and following dark brown or blackish; apical margins of segments, legs and antennæ testaceous; pubescence sparse and pale; head somewhat produced behind, very little narrowed; space between hind ocelli about twice as great as that between them and eyes; thorax indistinctly punctured; middle segment not ridged or roughened; first abdominal segment rather short and broad, distinctly, but not strongly punctured, other segments indistinctly punctured; wings subhyaline; nervures testaceous; stigma brown; marginal cell a little longer than half of stigma; third submarginal cell nearly quadrate, if anything, higher than long; second submarginal petiolate, much shorter than the third on the cubital nervure. Length 6 mm.

Arizona: Willcox, July 24th (Hubbard). One specimen in collection of U. S. National Museum.

17. **Brachycistis æqualis** n. sp.

♂.—Pale castaneous, clothed with sparse, whitish pubescence; antennæ paler; legs palest, tending to testaceous; head somewhat produced behind eyes, but scarcely narrowed; space between hind ocelli greater than that between them and eyes; thorax strongly punctured, the dorsulum and scutellum sparsely; mesosternum presenting two rather prominent convexities, which are more or less transversely striated as well as punctate, the striæ hardly evident in one example; middle segment roughened posteriorly, the upper and posterior surfaces separated by a sharp ridge, sulcus of upper surface broad; first abdominal segment short and broad, strongly punctured, barely as long as second segment; wings subhyaline; nervures and stigma brownish; marginal cell equalling the stigma in length; third submarginal much longer than high; second subtriangular about as long as third on cubital nervure; the first and second transverso-cubital veins widely separated above. Length 12–13 mm.

Colorado; Nevada; Arizona. Four specimens.

18. **Brachycistis triangularis** n. sp.

♂.—Pale castaneous, clothed with a tolerably dense, whitish pubescence; legs tending to testaceous; head a little produced behind, but not narrowed; space between hind ocelli greater than that between them and eyes; mesosternum with large, sparse punctures, the mesopleuræ with closer punctures; middle segment roughened behind, especially above, not ridged, the sulcus of upper surfaces

shallow; first segment short and broad, rather pyriform, strongly convex posteriorly and with strong punctures; wings subhyaline, nervures and stigma testaceous, the latter sometimes brown; marginal cell about equal to two-thirds the length of stigma; third submarginal higher than long; second triangular generally subpetiolate, almost equal to the length of the third on the cubital nervure. Length 9 mm.

Arizona. Four specimens.

19. **Brachycistis brevis** n. sp.

♂.—Pale castaneous, sparsely clothed with pale pubescence; antennæ and legs testaceous, the latter palest; head very little produced and not narrowed behind; space between hind ocelli greater than that between them and eyes; punctures of thorax large and sparse, closest on mesopleuræ, sparsest on dorsulum; upper and posterior surfaces of middle segment roughened at sides, and the portion dividing them also roughed, otherwise comparatively smooth, except in the sulcus of upper surface; abdomen with strong, scattered punctures; first segment short and broad, almost as wide at apex as base of second; wings subhyaline, nervures and stigma testaceous; marginal cell very short, barely equalling half of the stigma in length; two submarginals of nearly equal length, the second subpetiolate; second recurrent vein interstitial with the second transverso-cubital vein. Length 9 mm.

California. One specimen.

20. **Brachycistis perpunctatus** Ckll.

Brachycistis perpunctatus Cockerell, Tr. Am. Ent. Soc., xxii, p. 291, ♂, 1895.
Mutilla Belfragei Dalla Torre, Cat. Hym., viii, 15, 1897.

New Mexico: Las Cruces. This species is not at all similar to *Chyphotes Belfragei*, with which Dalla Torre has confused it in his "Catalogue."

The following two species are represented in the female sex only:

21. **Brachycistis rutilans** Blake.

Mutilla rutilans Blake, Tr. Am. Ent. Soc., vii, 248, ♀, 1879.

California.

22. **Brachycistis bimaculatus** n. sp.

♀.—Pale castaneous, sparsely clothed with short, pale pubescence; thorax above with a whitish, pale, not very dense pubescence; head and thorax finely punctured; legs paler than thorax; second dorsal with two widely separated, pale yellowish spots; second and third dorsals apically, and sixth medially fuscous, the latter yellow at base and apex. Length 4 mm.

Missouri: Ripley County (P. J. Schmitt). One specimen sent to me by Rev. R. Kraus.

MYRMOSA Latreille.

Of the four species at present described from the United States, only one is known in the female sex, *M. thoracica*, and there is little doubt but that this will prove to be the female of *M. unicolor*, as both inhabit precisely the same regions.

MALES.

Second submarginal cell triangular, smaller than third, the first and second transverso-cubital veins uniting above; head, thorax and abdomen coarsely punctured: first ventral abdominal segment with a hook at base, the second ventral unarmed; hind coxæ with a blunt tooth or lamellate process above.....**unicolor** Say.

Second submarginal cell elongate, larger than third, the first and second transverso-cubital veins widely separated above; body finely punctured; first ventral not hooked.....2.

2. Hind coxæ above with a distinct spine; insect black, at most with tip of abdomen reddish; third submarginal narrowed above, higher than long. **parvula** Fox.

Hind coxæ with a blunt tooth or lamellate process; head, thorax and legs black, abdomen ferruginous; third submarginal quadrate, longer than high.....**rufiventris** Blake.

FEMALES.

M. thoracica, the only American species known in the female sex, is coarsely punctured; ferruginous, with abdomen more or less blackish above; first segment transversely carinated above, beneath prominently produced at base; the front of head is usually blackish.

1. **Myrmosa unicolor** Say.

Myrmosa unicolor Say, Keating's Narrative Long's Expedition St. Peter's River, etc., ii, 331, ♂, 1824; LeConte's Ed. Say's Entom., i, 222, 1859.
Ischioceras rugosa Provancher, Nat. Can., xiii, 8, ♂ (not ♀), 1882.
Mutilla unicolor Dalla Torre, Cat. Hym., viii, 94. 1897.

Canada, southward to Virginia, thence westward to Colorado. Very variable in size. The base of second ventral segment may be tuberculate or not. I have Provancher's type of *Ischioceras rugosa* before me. It is identical with *M. unicolor*, save for an anomaly of venation, the second transverso-cubital vein being abbreviated and represented by a mere stump, which does not reach half-way to the marginal cell. The description by Provancher of the male probably applies to *Methoca stygia*.

2. **Myrmosa parvula** Fox.

Myrmosa parvula Fox, Journ. N. Y. Ent. Soc., 53, ♂, 1893.
Mutilla antisemitica Dalla Torre, Cat. Hym., viii, 10, 1897.

Illinois; Montana.

3. **Myrmosa rufiventris** Blake.

Myrmosa rufiventris Blake, Tr. Am. Ent. Soc., vii, 254. ♂, 1879.
Mutilla erythrogaster Dalla Torre, Cat. Hym., viii, 36, 1897.

Nevada. Only the unique type seen.

4. **Myrmosa thoracica** Blake.

Mutilla thoracica Blake, Tr. Am. Ent. Soc., xiii, 204, ♀, 1886.
Mutilla erythronota Dalla Torre, Cat. Hym., viii, 36, 1897.

Generally distributed, as *M. unicolor*.

MORSYMA * gen. nov.

Female apterous; eyes facetted; three distinct ocelli; thorax divided into three parts; legs graceful, not flattened; tibial spurs 1-2-2; claws simple; abdomen fusiform, not carinate, the first ventral unarmed; no pygidium; body strongly punctured. Male unknown.

1. **Morsyma Ashmeadii** n. sp.

♀.—Head and thorax and first segment ferruginous; abdomen, except first segment, legs and antennæ black; pubescence long and black, a whitish fringe at apex of second dorsal; head with large, separated punctures, wider than thorax; mandibles acute, armed with a tooth within before apex; thorax rugose above, punctured on sides, except on middle segment, the sides of which are smooth; abdomen finely punctured, except on second ventral, where the punctures are large and separated. Length 6 mm.

California: Napa County (Coquillet). One specimen in collection of the U. S. National Museum.

Morsyma differs from *Myrmosa* in the tripartite thorax, and while agreeing in that respect with *Methoca*, differs from it in the coarsely sculptured body, two-spurred medial tibiæ, etc. It is clearly related to both of these genera.

METHOCA Latreille.

Of the four species at present on our lists, *M. pacalis* Harris must be excluded, as it was never described; *M. canadensis* Smith is apparently synonymous with *M. stygia*; and *M. californicus* will probably turn out a variety of *M. bicolor*; the latter is very likely the female of *M. stygia*.

MALES.

Pubescence griseus; wings not clear.....**stygia** Say.
Pubescence black; wings somewhat shaded.....**nigrior** n. sp.

FEMALES.

Head black; remainder of insect castaneous in greater part.....**bicolor** Say.
Head concolorous with greater part of body, castaneous..**californica** Westw.

*Anagram of *Myrmosa*.

1. **Methoca stygia** Say.

? Mutilla (Methoca) pacilis Harris, Cat. Anim. Mass. Insect. p. 587, 1835 (no description).

Tengyra stygia Say, Bost. Journ. Nat. Hist., i, 299, ♂, 1836.

Methoca canadensis Smith, Cat. Hym. Brit. Mus., iii, 67, ♂, 1855.

Ischiocerus rugosa Provancher, Nat. Can., xiii, 8, ♂ (excl. ♀), 1882.

Methoca stygia Blake, Tr. Am. Ent. Soc., xiii, 280, ♂, 1886.

Occurs from Canada to Virginia, westward to Montana and Nevada.

2. **Methoca nigrior** n. sp.

♂.—Deep black, shining; pubescence short and black; clypeus tuberculate medially; head with distinct punctures, those on vertex larger and more separated; antennæ stout (last joints missing); thorax with strong punctures, those on upper surface well separated; middle segment rugoso-reticulate, practically as in *M. stygia*. posterior surface transversely rugose; abdomen with tolerably distinct, sparse punctures, finer than in *stygia;* wings a little infuscated. Length 12½ mm.

State of Washington. One specimen. This is a much blacker insect than *M. stygia*, which has a grayish appearance.

3. **Methoca bicolor** Say.

Methoca bicolor Say, Bost. Journal Nat. Hist., i, 299, ♀, 1836; Blake, Tr. Am. Ent. Soc., xiii, 279, ♀, 1886.

I have only seen specimens from New Jersey (June and July) and Kansas, but have no doubt it is generally distributed as *M. stygia;* Provancher records it from Canada.

4. **Methoca californica** Westw.

Methoca californica Westwood, Tr. Ent. Soc. Lond., 1881, 133, ♀.

California. I am inclined to regard this as a variety of *bicolor* in the absence of California specimens. I have a New Jersey example, which I regard as *bicolor* var., which agrees perfectly with Westwood's description.

TELEPHOROMYIA Guérin.

This genus was described from Chile and Patagonia, and Ashmead recently records a species from California, which, while agreeing with most of Guérin's generic description, yet differs in having the claws supplied with a sharp median tooth internally, not with too teeth as in *Telephoromyia.* I am now inclined to regard my *Telephoromyia punicea* from Brazil, with cleft claws, as not representing *Telephoromyia.* It is certain that *punicea* and *anthracina* do not belong to the same genus.

1. **Telephormyia anthracina** Ashm.
Telephoromyia anthracina Ashmead, Psyche, 251, ♂, 1898.

California: Los Angeles; Washington. This is coal black, with the clypeus and inner orbits yellowish.

GLYTOMETOPA Ashmead.

Glytometopa is a representative of the true Thynninæ differing from *Myrmosa, Morsyma* and *Methoca* by the broadly flattened legs. It closely resembles the figure of *Bradynobœnus Gayi*, given in Gay's Historia de Chili, but, according to the description of the latter, the number of joints of the labial and maxillary palpi is different. It is interesting to note, that while Spinola describes the thorax of *Bradynobœnus* as bipartite, the figure shows it to tripartite.

1. **Glytometopa americana** Ashm.
Glyptometopa americana Ashmead, Psyche, 251, ♀, 1898.

California: Alameda County.

ADDENDA.

[NOTE.—After the present paper had been so far printed as to not allow insertion iu their proper order, the following three species were found to have been omitted from the catalogue of species, although included in the synoptic table.]

89*a*. **Mutilla Foxi** Ckll.
Sphærophthalma Foxi Cockerell, Ent. News, v, 199, ♂, 1894.
Mutilla foxii Dalla Torre, Catal., viii, 41, 1897.

Mexico; New Mexico.

89*b*. **Mutilla fulvohirta** Cress.
Mutilla fulvohirta Cresson, Proc. Ent. Soc. Phila., iv, 433, ♂, 1865.
Sphærophthalma fulvohirta Blake, Tr. Am. Ent. Soc., xiii, 219, ♀, 1886.

Colorado; New Mexico.

89*c*. **Mutilla Townsendi** Ckll.
Sphærophthalma Townsendii Cockerell, Ent. News, v, 199, ♂, 1894.
Mutilla townsendii Dalla Torre, Catal., viii, 92, 1897.

Arizona; New Mexico.

149*a*. **Mutilla Ashmeadii** Fox.
Photopsis nanus Ashmead, (nec *Mutilla nana* Smith), Tr. Am. Ent. Soc., xxiii, 181, ♂, 1896.

Arizona: Tucson.

INDEX TO SPECIES.

INDEX.

The names of new genera and new species are followed by the names of the Author.

ERRATA.

Page 172, line 27, for wider than long *read* longer than wide.
" 174, line 23, for deplexed *read* deflexed.

See page 184.